CITY OF SCOTTSDALE

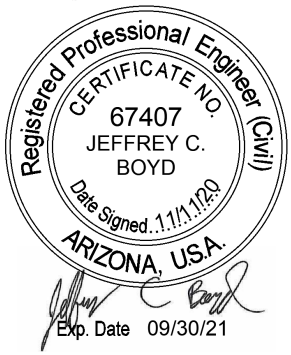
Drainage Reports

PRELIMINARY DRAINAGE REPORT

Centum Health
Scottsdale, Arizona

Prepared for:

Centum Health Properties
1300 N. 12th St. Suite 513
Phoenix, AZ 85006



Prepared by:

Kimley»Horn

291247001
NOVEMBER 2020

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Centum Health
Scottsdale, Arizona

November 11, 2020

Prepared for:

Centum Health Properties
1300 North 12th Street, Suite 513
Phoenix, Arizona 85006

Prepared By:

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7740 N. 16th Street, Suite 300
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291247001
November 2020

List of Appendices

List of Figures in Appendix E (Exhibits)

1.0 Introduction

1.1 Project Description

Centum Health Properties is proposing to redevelop and expand the existing medical office building located at 7331 E. Osborn Road in Scottsdale. The plans include adding approx. 46,315 square feet to the existing building to square off the existing triangular structure and constructing a two-level parking deck in place of the existing surface parking lot.

1.2 Site Location

The proposed development encompasses approximately 2.4 net acres in a portion of the Southwest Quarter of Section 26, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. The site is zoned C-3 and is currently part of the Scottsdale Medical Pavilion Condominium.

1.3 Purpose

This Preliminary Drainage Report is intended to satisfy City of Scottsdale requirements. This report provides a description of the current storm water drainage patterns and systems as well as a description of the required and proposed drainage improvements.

1.4 Objectives

This report provides a drainage plan for the site that is intended to meet the drainage standards and guidelines of the City of Scottsdale. This report will demonstrate the following:

1. The existing site drainage patterns will experience minimal alteration.

2. The existing site is not in a floodplain.

3. Off-site flows do not impact the site.

4. In accordance with the City of Scottsdale Design Standards & Policies, with the redevelopment of the existing site being over 1 acre in size, first flush will be treated before being discharged.

5. Drainage facilities will be designed such that the 100-year post-development flows are collected and conveyed in such a manner to avoid damage to buildings and property.

2.0 Description of Existing Drainage Conditions and Characteristics

2.1 Existing Drainage Conditions

The site currently consists of a medical office building, surface parking lot, and minimal landscape. The site is bounded by existing Ashford Scottsdale apartments to the west, Osborn Drive to the north, Wells Fargo Avenue to the east, and Drinkwater Boulevard to the south.

The site generally slopes from the north to the south. There currently is not any site retention or surface runoff treatment. Building roof drains and below deck courtyard drains connect to bubble up structures along the north side of the existing surface parking lot. Below deck drains are sent through an existing pump in the mechanical room in the building and pumped up to the aforementioned bubble up structures in the existing surface parking lot. Water discharged from the bubble structures combine with surface flows from the existing parking lot and are conveyed via sheet flow to the southeast corner of the site where they are collected by a catch basin. Said catch basin connects to 30" RCP storm sewer that ultimately discharges into the city storm sewer in Drinkwater and sent west via 3'x5' box culvert.

2.2 Existing Off-Site Drainage Conditions

There are no off-site flows that impact the site. Drainage north and east of the site are contained via existing road improvements and picked up via curb inlet scuppers in Wells Fargo Ave. The west adjacent parcel is separated by a screen wall that blocks any flow into the site development area. Drinkwater to the south is the site's ultimate outfall and drainage is collected into the city's storm sewer.

2.3 Context Relative to Adjacent Projects and Improvements

The site is bounded by existing Ashford Scottsdale apartments to the west, Osborn Drive to the north, Wells Fargo Avenue to the east and Drinkwater Boulevard to the south. See Figure 1 in ***Appendix F*** for Context Aerial of the site.

2.4 FEMA Flood Hazard Areas

The site is located in Flood Zone "X" according to the Flood Insurance Rate Map 040132C2235L, dated October 16, 2013. Zone "X" is designated by FEMA as "areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood."
Refer to ***Appendix B*** for the FEMA FIRM map for the site.

3.0 Proposed Drainage Plan

3.1 General Description

In the analysis of the proposed drainage conditions the following items are considered:

- Area Types (concrete pavement, building, and desert landscaping)
- Magnitude of areas
- Slopes
- Storm Drain
- Alternate First Flush Treatment Device

3.2 Proposed Site Conditions

The proposed re-development of the site includes vertical expansion of the existing commercial medical building and replacing the existing surface parking lot south of the building with a 2-story parking garage.

Site-generated storm water from areas west and south of the building/garage (Area 5 per ***Figure 4 –*** Drainage Area Map) will be conveyed south via landscape swale to discharge to Drinkwater Blvd and be collected via city storm sewer curb inlets. These nuisance flows within the landscape will be factored in the volume of first flush treatment required for the site as discussed later in this report.

Site generated storm water from the below grade courtyard north of the building (Area 10 per ***Figure 4*** – Drainage Area Map**)** will continue to be collected via storm drain, sent to the building, and connect to the building's existing 1st floor roof drain line. The storm drain will then continue south through the building and run to the garage. This drainage will connect storm drains from the south below grade courtyard entrance (Area 25 per ***Figure 4*** – Drainage Area Map) and below grade Level P1 of the garage and run through a new sump pump in the garage and discharge to the proposed 18" storm near southeast corner of the garage. The stormwater collected is sent south via 18" storm sewer through an DVS-60 Oldcastle Dual Vortex Separator Structure for First Flush Treatment before ultimately discharging into the existing 30" Public Storm Sewer via new manhole connection on the SE corner of the site.

Site generated storm water from Level P2 of the garage will be conveyed via sheet flow to a series of deck drains on east side of the garage. Drainage collected from top deck of the garage will run along the east side of the garage in level P1 and gravity flow south of the garage to connect to a proposed 18" storm sewer southeast of the garage. The stormwater collected is sent southwest via 18" storm sewer through an DVS-60 Oldcastle Dual Vortex Separator Structure

for First Flush Treatment before ultimately discharging into the existing 30" Public Storm Sewer via new manhole connection on the SE corner of the site.

Roof Drains from the building (Area 15 per **Figure 4 – Drainage Area Map**), levels 2-5, will be re-routed to southeast corner of the building and run through the garage to connect to Level P2 deck drains of the garage. These flows head south via gravity storm drains in the Garage and exit near the southeast corner of the garage to connect to an 18" storm sewer. The stormwater collected is sent southwest via 18" storm sewer through an DVS-60 Oldcastle Dual Vortex Separator Structure for First Flush Treatment before ultimately discharging into the existing 30" Public Storm Sewer via new manhole connection on the SE corner of the site.

3.3 Proposed Off-Site Conditions

Off-site storm water impacts are not anticipated. As discussed in existing off-site conditions, drainage north and east of the site are contained via existing road improvements and picked up via curb inlets scuppers in Wells Fargo Ave.

3.4 Storm Water Storage Requirements

The site does not require detention because the site is already developed, but since the site is greater than an acre in size, First Flush Treatment is required.

3.5 Proposed Drainage Structures or Special Drainage Facilities

A storm water pump will be used in the garage to convey storm water from the below grade runoff and connect to the proposed 18" storm sewer southeast of the garage.

An DVS-60S Oldcastle Dual-Vortex Separator will be installed immediately upstream of the connection to the existing 30" City Storm Sewer.

The building has existing finished floor elevations below grade with level one at 1235.07' and 1246.03' at the second level. Per the FEMA map, this area is located in Zone X which is defined as areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood.

The entrance to the lower level of the parking garage has been set to match level one of the existing building finish floor at 1235.07'.

Topographic survey conducted in 2020 was used as the basis to determine the natural grade. This survey data reflects the grades of the area prior to this proposed re-development.

3.6 ADEQ AZPDES requirements

A Notice of Intent (NOI) will be submitted to Arizona Department of Environmental Quality (ADEQ) in conformance with the Arizona Pollution Discharge Elimination System Permit (AZPDES) permit. The NOI and associated storm water management best management practices

will remain active on the site until construction is complete and a Notice of Termination is filed with ADEQ in conformance with AZPDES permit.

3.7 Project Phasing

This project will be constructed in a single phase.

4.0 Data Analysis Methods

4.1 Hydrologic Procedures, Parameter Selection, and Assumptions

Hydrologic calculations for the site were performed using the rational equation in the FCDMC Drainage Design Manual Volume I, which is limited to drainage areas of up to 160 acres.

All flows for proposed conditions will be determined using the rational method as outlined by the Drainage Design Manual by Maricopa County Flood Control District. Due to the small nature of the watersheds for the individual sub-basins, a minimum time of concentration of ten minutes will be assumed. All of the drainage basins assume a runoff coefficient of 0.95 with the exception of the landscape which are assumed a runoff coefficient of 0.45 per the City of Scottsdale Design Standards and Policy Manual.

For analysis of the development, the site was sub-divided into five sub-basins consisting of the parking garage, landscaping, and building. For each sub-basin, the Rational equation will be used to calculate the peak flow at each concentration point for each basin. Refer to Figure 4 in **Appendix F** for the Drainage Area Map.

4.2 Hydraulic Procedures, Methods, Parameter Selection, and Assumptions

The following criteria will be used to size the proposed pipes for on-site storm water conveyance:

- A maximum allowable 100-year ponding depth of six inches above the catch basin grate.
- A minimum of 12 inches of freeboard between the 100-year ponding depth and the building finish floor elevation.
- The tailwater condition for the 100-year (1240.21') and 10-year (1237.94') event at this models Outfall is assumed based on Lower Indian Bend Wash Area Drainage Master Study (ADMS) South Model 100-YR, 6-HR Model completed by Gavan Barker Inc in 2017.
- The hydraulic grade line in the storm sewer shall be no higher than 6 inches below the gutter line in a 10-year flood.

StormCAD analysis for the 10-year and 100-year events are provided in ***Appendix E*** – StormCAD Exhibit.

Storm drain catch basins will be sized using Figure 3.29 from the FHWA HEC-12 dated 1984. A 50% clogging factor will be applied in the analysis.

This project proposes to utilize an Oldcastle Dual-Vortex Separator to maintain storm water quality. These units are designed to treat the first flush of storm water before it enters the

existing 30" City Storm Sewer. A 60-inch diameter Oldcastle Dual-Vortex storm water quality unit will be installed and has been sized to accommodate the first flush flows from the site, and to bypass flows in excess of the first flush. Refer to ***Appendix D*** for cut sheet of Treatment Structure.

4.3 Storm Water Storage and First Flush Treatment Calculation Methods and Assumptions

As described previously, the site does not require detention because the site is already developed, but since the site is greater than an acre in size First Flush Treatment is required. The standard formula for determining the required storage volumes for the 100-year, 2-hour storm is as follows:

Equation 2: Standard Formula for On-Site Storage Requirement

$$V_R = CPA/12$$

Where: V_R = storage volume required (acre-feet)

C = weighted runoff coefficient

P = precipitation depth for 100-year, 2-hour event = 2.16 inches

A = contributing drainage area to basin (acres)

Refer to ***Appendix C*** for Storm Water Detention Calculations, and Figure 4 in ***Appendix F*** for the Drainage Area Map.

For First Flush Treatment, this project proposes the utilization of an Old Castle Dual-Vortex Separator to treat the flow from the first flush and convey the 100-year 2-hour flow to the existing 30" storm drain to the southeast of the site.

The first flush flow rates are determined based on the City of Phoenix Storm Water Policies and Standards section 6.8.3 with modifications per Hasan Mushtaq and Keith Kesti using the following equation:

Equation 3: Standard Formula for First Flush Flow Rate

$$Q_{FF} = C*I*A$$

Where:

Q_{FF} = minimum first flush discharge in cfs

C = runoff coefficient (set to 1.00 for first flush condition)

A = tributary drainage area in acres

I = NOAA 14 100-year 2-hour intensity multiplied by depth ratio (first flush depth divided by 100-year 2-hour depth) = 1.08(0.5/2.16) = 0.25

This method for calculating first flush flow has been proposed as a revision to the City of Phoenix Storm Water Policies and Standards and effectively reduces flow.

Aside from the first flush flow rate, the sizing of the Dual-Vortex Separator is dependent on the 100-year, 2-hour flows that will be conveyed through each structure.

The 100-year 2-hour flow rates are determined using the rational method and the City of Scottsdale Storm Water Policies and Standards. The sizing of the Old Castle Precast Dual-Vortex Separator is based on the total flow and the first flush flow per the table shown in ***Appendix D***. Refer to Figure 4 ***Appendix F*** for Drainage Area Map. See Table 2 below for the drainage area tributary to each concentration point, their corresponding first flush and total flow rates, and the storm water quality unit required to treat each area.

Adda column for: NJCAT Treatment Flow Rate(cfs)

Calculated First Flush Flow

Type

Device Maximum Treatment Flow Rate

Already factored in flow calculation and is irrelevant to this table

Table 2 – Storm Water Quality Unit Sizing

Tributary Area (Acres)	Time of Concentration (min)	~~First Flush Treatment Req.~~ (CFS)	Calculated 100-Yr ~~2-Hr~~ Flow ~~Req.~~ (CFS)	Device ~~Size~~	~~Frist Flush Treatment Prov.~~ (CFS)	~~100-Yr 2-Hr Flow Prov.~~ (CFS)
Area 5 = 0.23	10	0.06	0.6	DVS-60S (60-inch)	2.50	16
Area 10 = 0.11	10	0.03	0.6			
Area 15 = 0.53	10	0.13	2.8			
Area 20 = 1.35	10	0.34	7.2			
Area 25 = 0.07	10	0.02	0.4			
Total = 2.29		**Total = 0.58**	**Total = 11***			

Total Device Flow Capacity

***11 CFS total because Area 5 is not collect by on-site storm sewer but factored in total first flush treatment flow required for site development.**

Per Table 2 above, the required First Flush Flow is 0.58 CFS with capacity to allow 11 CFS for the 100-yr 2-Hr flow. With the selection to use DVS-60S Oldcastle Dual Vortex Separator, the determining factor was the handling of the 100-YR 2-HR storm which the selected device can handle 16 CFS. As a result, the first flush treatment flow treated is 2.5 CFS which is near 5 times more than the required amount. Refer to ***Appendix D*** for cut sheet of Treatment Structure and capacity chart.

5.0 Conclusion

Based on the results of this preliminary drainage report, the following can be concluded:

- No off-site drainage affects the site.
- Redevelopment of the site requires First Flush Treatment due to site being over an acre. First Flush will be handled by Oldcastle Dual-Vortex Separator Structure and be sized to handle 100-yr, 2-hour flows.
- DVS-60S Oldcastle Dual-Vortex Separator Structure provides 5 times more first flush treatment flow than required for the site.
- Based on the current Flood Insurance Rate Map (FIRM), the site is located in the Zone “X”.

This preliminary drainage report is intended to provide a level of assurance that the site will adhere to all appropriate reviewing agency guidelines with respect to drainage and flood protection.

6.0 References

1. City of Scottsdale, *Design Standards and Policies Manual, Chapter 4: Grading and Drainage,* February 2018.

2. Federal Emergency Management Agency (FEMA), *Flood Insurance Rate Map (FIRM) of Maricopa County, Arizona and Incorporated Areas, Panel 1320 of 4425, Map Number 04013C1320L,* October 16,2013.

3. Flood Control District of Maricopa County (FCDMC), *Drainage Design Manual for Maricopa County, Hydrology Volume,* July 2018.

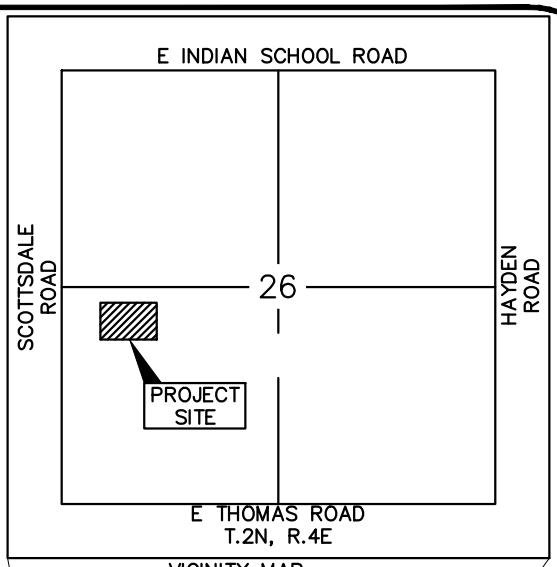
4. Flood Control District of Maricopa County (FCDMC), *Drainage Design Manual for Maricopa County, Hydraulics Volume,* July 2018.

Appendix A

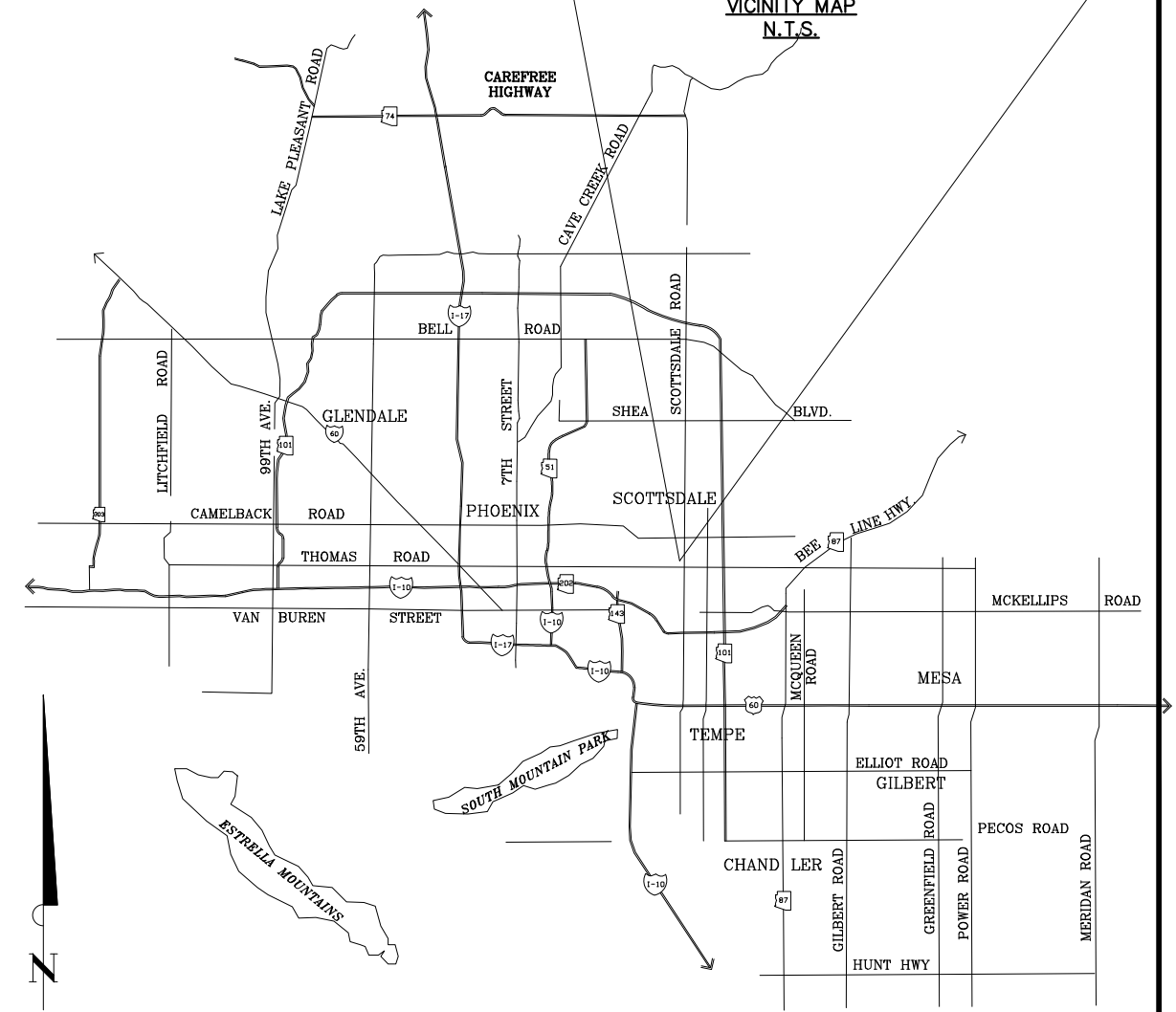
Site Location Map

PROJECT INFORMATION

SITE ADDRESS: 7331 E OSBORN DR,
Scottsdale, AZ 85251



VICINITY MAP
N.T.S.

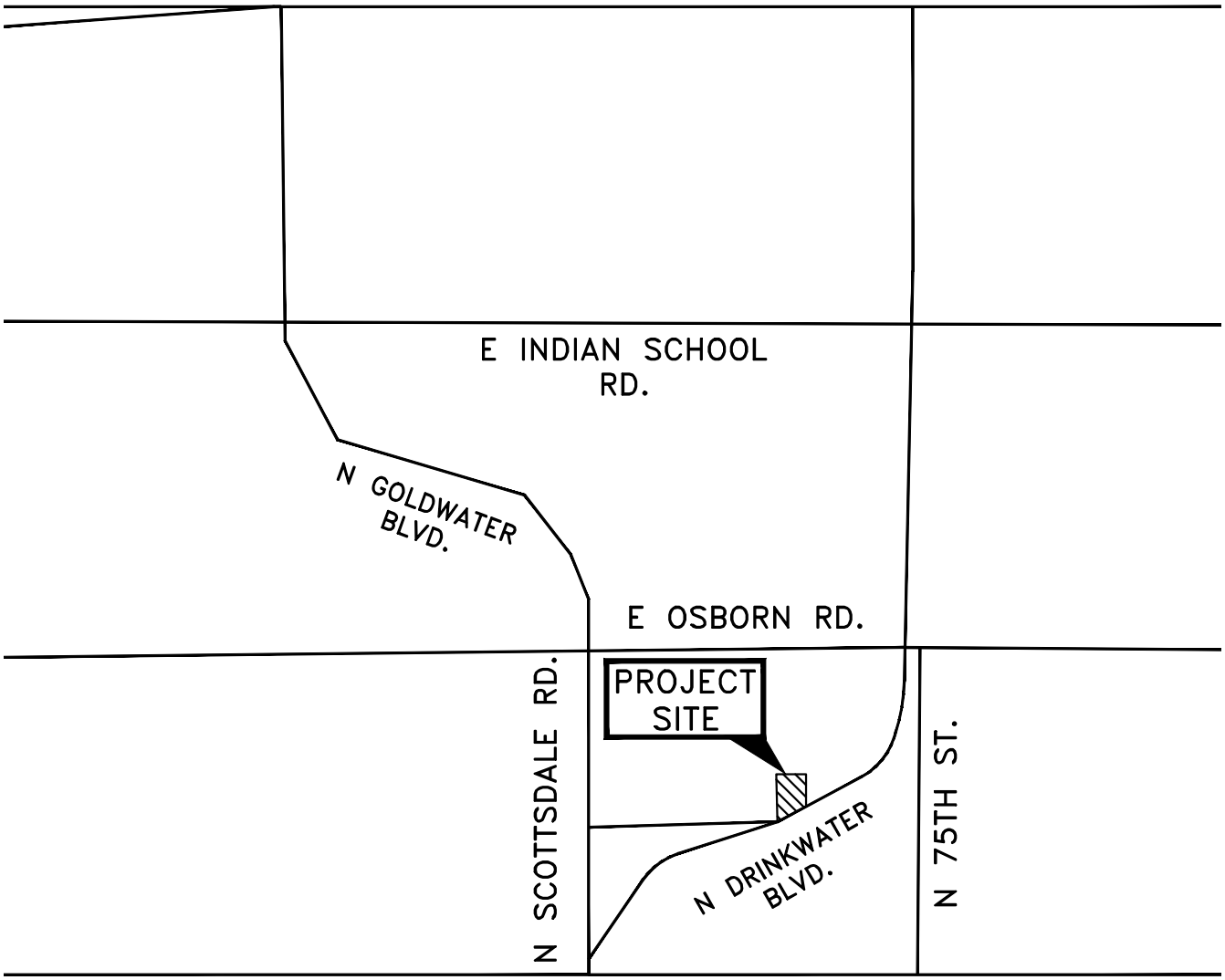


(N.T.S.)

SITE LOCATION MAP

Kimley»Horn

14-DR-2020
14-DR-2020 V3
11/12/2020
12/17/20



NORTH

VICINITY MAP

SCOTTSDALE, AZ
N.T.S.

Kimley»Horn

Appendix B

FEMA Flood Insurance Rate Map (FIRM)

National Flood Hazard Layer FIRMette

FEMA

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/24/2020 at 12:35:35 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective unmapped and unmodernized areas can regulatory purposes.

14-DR-2020

14-DR-2020_V3

11/12/2020

12/17/20

Appendix C

Hydrologic/Hydraulic Calculations

Peak Flow Calculations Using The Rational Method

Project:	Centum Health Scottsdale
Proj #:	291247001
Date:	11/11/20
Prep by:	JCB
Check by:	MLD

Base Sheet Prepared By GA, Version 2

Source of Rainfall Data --->NOAA Atlas 14

Rainfall Depth-Duration-Frequency (D-D-F), (inch)					
Storm Fequency	Time				
	5 min	10 min	15 min	30 min	60 min
10-Yr	0.39	0.59	0.74	0.99	1.23
100-Yr	0.62	0.94	1.17	1.57	1.95
Derived Rainfall Intensity-Duration-Frequency (I-D-F), (in/hr)					
10-Yr	4.68	3.56	2.95	1.98	1.23
100-Yr	7.43	5.65	4.68	3.14	1.95

Attach source and supporting data for rainfall depths

AF for Cw per $Cw_{10\text{-}Yr}$		
Freq.	Typical	Applic.
2-Yr	1.00	1.00
5-Yr	1.00	1.00
10-Yr	1.00	1.00
25-Yr	1.10	1.00
50-Yr	1.20	1.00
100-Yr	1.25	1.00

AF=Frequency Adjustment Factor

Drainage Area ID: -----

Tc,calc method: 1=Papadakis and Kazan, 2=Avg Veloc. = 1

Tc,calc=11.4*L^0.5*Kb^0.52*S^-0.31*i^-0.38

Cw for each frequency is adjusted as a function of the 100-year value per the table above

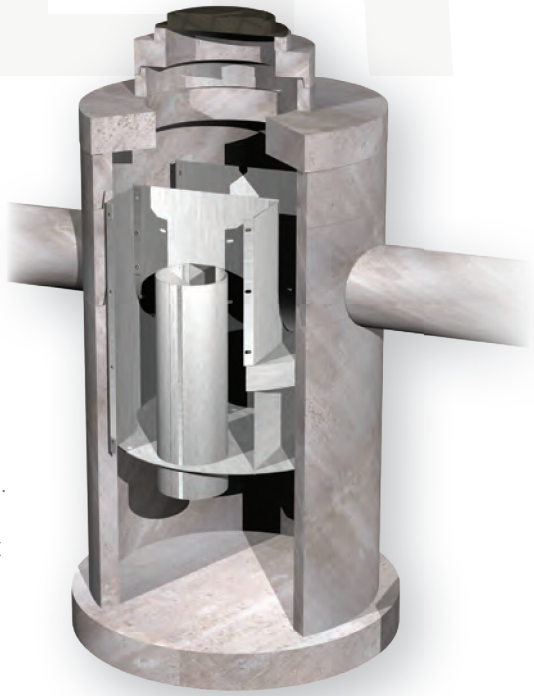
Concent. Point #	Contributing Sub-basins	Total Area (ac)	Base Cw (2-10 yr)	Flow Path, L (ft)	Approx High pt (ft)	Approx Low pt (ft)	Average Slope ft/ft	K_b Class A-->D	m	b	K_b	Initial/lot Tc (min)	10-Yr Minim allowed Tc,tot = 10.0 Cw AF=1.00	10-Yr Tc,calc (min)	10-Yr Tc,tot (min)	10-Yr i (in/hr)	10-Yr Q (cfs)	100-Yr Minim allowed Tc,tot = 10.0 Cw AF=1.00	100-Yr Tc,calc (min)	100-Yr Tc,tot (min)	100-Yr i (in/hr)	100-Yr Q (cfs)
5		0.23	0.45	340	43	41.75	0.0037	A	-0.00625	0.04	0.0440	0	0.45	7.9	10.0	3.56	0.4	0.45	6.5	10.0	5.65	0.6
10		0.11	0.95	128	35.3	35.07	0.0018	A	-0.00625	0.04	0.0460	0	0.95	5.9	10.0	3.56	0.4	0.95	5.0	10.0	5.65	0.6
15		0.53	0.95	273	92.51	45.96	0.1705	A	-0.00625	0.04	0.0417	0	0.95	2.0	10.0	3.56	1.8	0.95	1.7	10.0	5.65	2.8
20		1.35	0.95	330	45.96	43.11	0.0086	A	-0.00625	0.04	0.0392	0	0.95	5.4	10.0	3.56	4.6	0.95	4.5	10.0	5.65	7.2
25		0.07	0.95	100	35.1	35	0.0010	A	-0.00625	0.04	0.0474	0	0.95	6.5	10.0	3.56	0.2	0.95	5.4	10.0	5.65	0.4

Appendix D

Old Castle Precast Dual-Vortex Separator Cut Sheet

Oldcastle Infrastructure™
A CRH COMPANY

CYCLONIC Separation



Enhanced Gravity Separation of Stormwater Pollutants in a Compact Configuration

Dual-Vortex Efficiency

Particle settling is enhanced by circular flow patterns and a highly circuitous flow path created by two independent vortex cylinders.

Settled particles are collected in the isolated bottom storage area, while floating trash, debris and petroleum hydrocarbons are retained in the cylinders and upper storage areas.

During peak events, flows in excess of design treatment overtop the bypass weir and exit the system without entering the cylinders and lower storage area, thereby eliminating re-entrainment issues.

FEATURES:

- Maintenance Accessible Design
- Economical Installation
- Access Options
- Online System Capability
- Durable Construction
- Proven Performance
- Treatment Train

BENEFITS:

- Open access to accumulated floatables and sediment storage area
- Prepackaged and provided as compact round or square manholes
- Multiple access options (manhole cover or optional hinged lid)
- Internal high-flow bypass weir system provides for online or offline configurations
- Stainless-steel components installed in a reinforced concrete structure
- Third party tested and certified
- Can be installed upstream of infiltration, detention and retention systems or other treatment BMP's

Oldcastle Infrastructure™
A CRH COMPANY

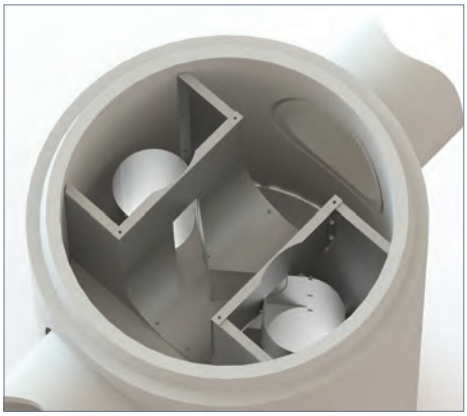
CYCLONIC
Separation

Dual-Vortex Separator Offers an Innovative, Economical Alternative for Removal of Suspended Pollutants from Stormwater Runoff

How it Works

STEP 1

Independent Vortex Cylinders & Control Weir - Flows are directed to the two independent vortex cylinders where particle settling is enhanced by circular flow patterns.



STEP 2

Captured Floatables - Floating trash, debris and petroleum hydrocarbons accumulate at the top of the two cylinders where they are held until transfer into the upper storage area by peak storm events.

STEP 3

Removal of Total Suspended Solids (TSS) - Particle settling is enhanced by the circular flow patterns and a highly circuitous flow path created by two independent vortex cylinders. Sediments are collected and retained in the isolated bottom storage area.

STEP 4

High-Flow Bypass - Flows in excess of the design treatment overtop the bypass weir and exit the system without entering the cylinders and re-entraining captured pollutants.

MODELS AND NOMINAL DIMENSIONS							
Model No.	Structure Diameter (ft.)	Standard Sump Depth* (ft.)	Minimum Rim to Invert Depth (ft.)	Sediment Storage* (cubic feet)	Oil and Floatable Storage (cubic feet)	NJCAT Treatment Flow Rate (cfs)	Maximum Treatment Flow Rate (cfs)
DVS-36	3	4.5	2.5	11	6	0.56	0.56
DVS-48	4	5.0	3.0	19	15	1.00	1.25
DVS-60	5	5.5	3.5	29	29	1.56	2.50
DVS-72	6	6.5	4.5	42	49	2.25	4.25
DVS-84	7	7.0	5.0	58	79	3.06	6.50
DVS-96	8	8.0	5.5	75	116	4.00	9.50
DVS-120	10	10.0	7.0	118	226	6.25	16.80
DVS-144	12	11.5	8.0	170	388	9.00	26.40

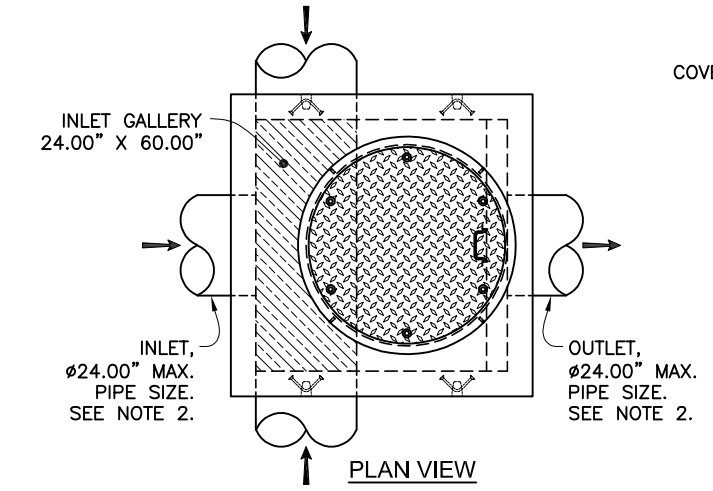
*Depth of unit can be increased to add storage capacity.

Available Options

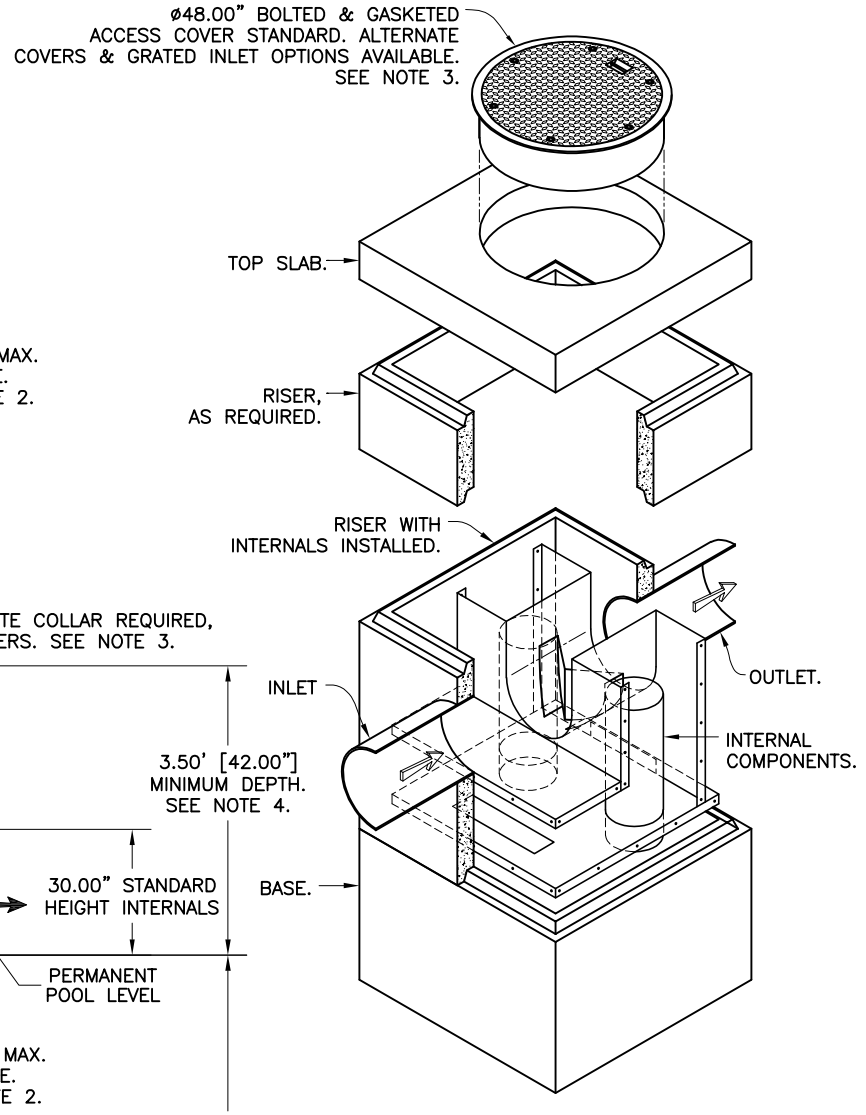
Square configurations accept multiple inlet pipes or meet other special site conditions.

Flume inlet control for grated inlet applications.

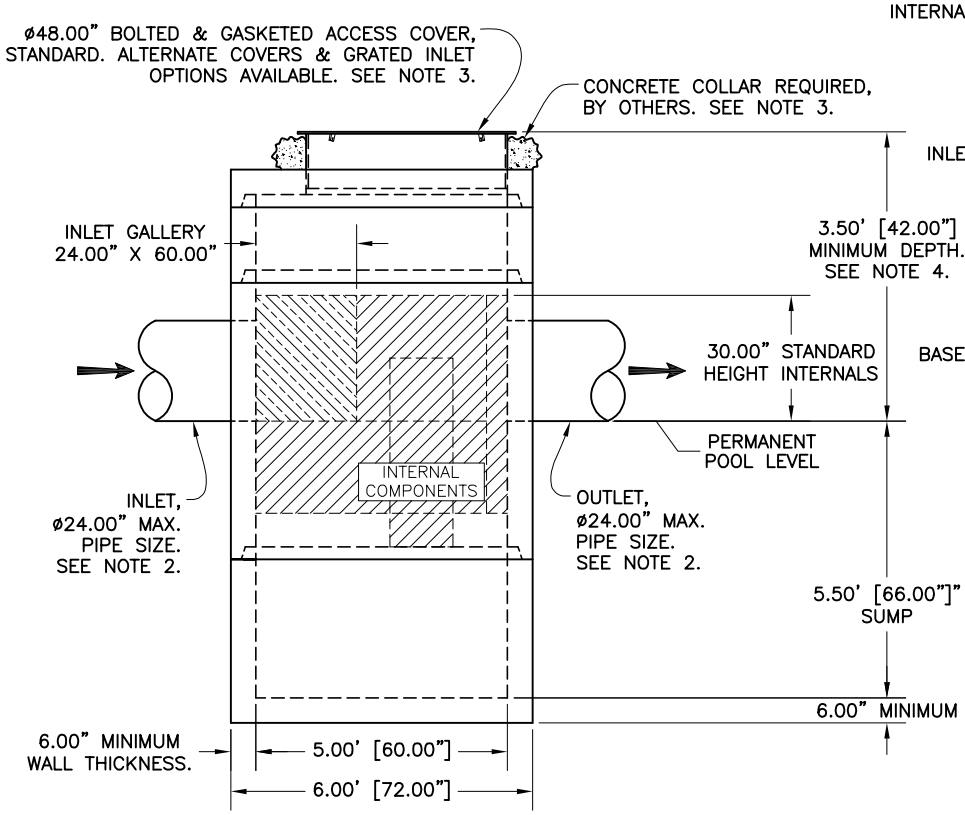
(800) 579-8819
oldcastleinfrastructure.com



PLAN VIEW



ISOMETRIC VIEW
SCALE 3/4



ELEVATION VIEW

NOTES:

1. TREATMENT CAPACITY IS DEPENDENT ON LOCAL REGULATORY REQUIREMENTS. BYPASS CAPACITY IS DEPENDENT ON OUTLET PIPE DIAMETER. CONTACT OLDCASTLE INFRASTRUCTURE, INC. FOR PROJECT–SPECIFIC TREATMENT AND BYPASS SIZING RECOMMENDATIONS.
2. STANDARD INLET/OUTLET PIPE CONFIGURATION TO ENTER AND EXIT STRUCTURE AT 180°. SPECIAL ANGLED CONFIGURATIONS AVAILABLE.
3. ACCESS COVER(S) MAY BE FIELD ADJUSTED TO GRADE. INLET GRATES & ALTERNATE COVER OPTIONS ARE AVAILABLE.
4. FOR DEPTHS LESS THAN THE MINIMUM SHOWN CONTACT OLDCASTLE INFRASTRUCTURE, INC.
5. STRUCTURE SHALL MEET AASHTO HS–20–44 DESIGN LOADING. CONCRETE COMPONENTS MANUFACTURED IN ACCORDANCE WITH ASTM C890 & C913.
6. UPON REQUEST, OLDCASTLE INFRASTRUCTURE, INC. CAN PROVIDE A PROJECT–SPECIFIC DRAWING WITH DETAILED DIMENSIONS, PICK WEIGHTS, AND SPECIALS (AS REQUIRED).

Hydrodynamic Separation

DVS-60S

Dual-Vortex Separator

Square Structure

Oldcastle Infrastructure™
A CRH COMPANY
Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater

DRAWING NO.	REV	ECO	DATE
DVS-60S	E	ECO–0152 JPR 1/10/19	JPR 4/25/ 11/12/2020 12/17/20

14-DR-2020
14-DR-2020 V3

FloGard® Dual-Vortex Hydrodynamic Separator

Characteristics and Capacities (English)

Model	ID	Depth Below Invert	Treated Flow Capacity[1]			Total Flow Capacity[3]	Max. Pipe Size	Sediment Storage	Oil/ Floatable Storage
	ft	*ft*	*67 µm cfs*	*110 µm cfs*	*Peak[2] cfs*	*cfs*	*in*	*yd³*	*gal*
DVS-36	3	3.75	0.12	0.35	0.50	4	12	0.3	18
DVS-48	4	5.00	0.25	0.75	1.25	9	18	0.7	43
DVS-60	5	6.25	0.45	1.30	2.50	16	24	1.3	83
DVS-72	6	8.25	0.70	2.00	4.25	27	36	2.2	141
DVS-84[4]	7	9.50	1.00	3.00	6.50	40	42	3.5	294
DVS-96	8	10.75	1.40	4.20	9.50	57	48	5.3	337
DVS-120[4]	10	13.50	2.50	7.30	16.80	99	48	9.7	917
DVS-144[4]	12	16.00	3.90	11.60	26.40	154	60	15.5	1825

Characteristics and Capacities (Metric)

Model	ID	Depth Below Invert	Treated Flow Capacity[1]			Total Flow Capacity[3]	Max. Pipe Size	Sediment Storage	Oil/ Floatable Storage
	m	*m*	*67 µm L/s*	*110 µm L/s*	*Peak[2] L/s*	*L/s*	*mm*	*m³*	*L*
DVS-36	0.9	1.14	3.5	10	14	113	300	0.23	68
DVS-48	1.2	1.52	7	21	35	255	450	0.54	163
DVS-60	1.5	1.91	13	37	71	453	600	1.00	314
DVS-72	1.8	2.51	20	57	120	765	900	1.70	534
DVS-84[4]	2.1	2.90	30	85	184	1133	1050	2.70	1113
DVS-96	2.4	3.28	40	120	269	1614	1200	4.00	1276
DVS-120[4]	3.0	4.11	70	205	475	2800	1200	7.40	3471
DVS-144[4]	3.7	4.88	110	330	750	4360	1500	11.90	6908

[1]Treated Flow Capacity is based on 80% removal of suspended sediment with the approximate mean particle size shown. The appropriate flow capacity should be selected based on expected site sediment characteristics.
[2] Maximum flow prior to bypass. Correlates approximately to 80% removal of suspended sediment with a 250 µm particle size mean.
[3] Total design flow to the system should not exceed the Peak Flow Capacity.
[4]Call Kristar representative for availability in your area.

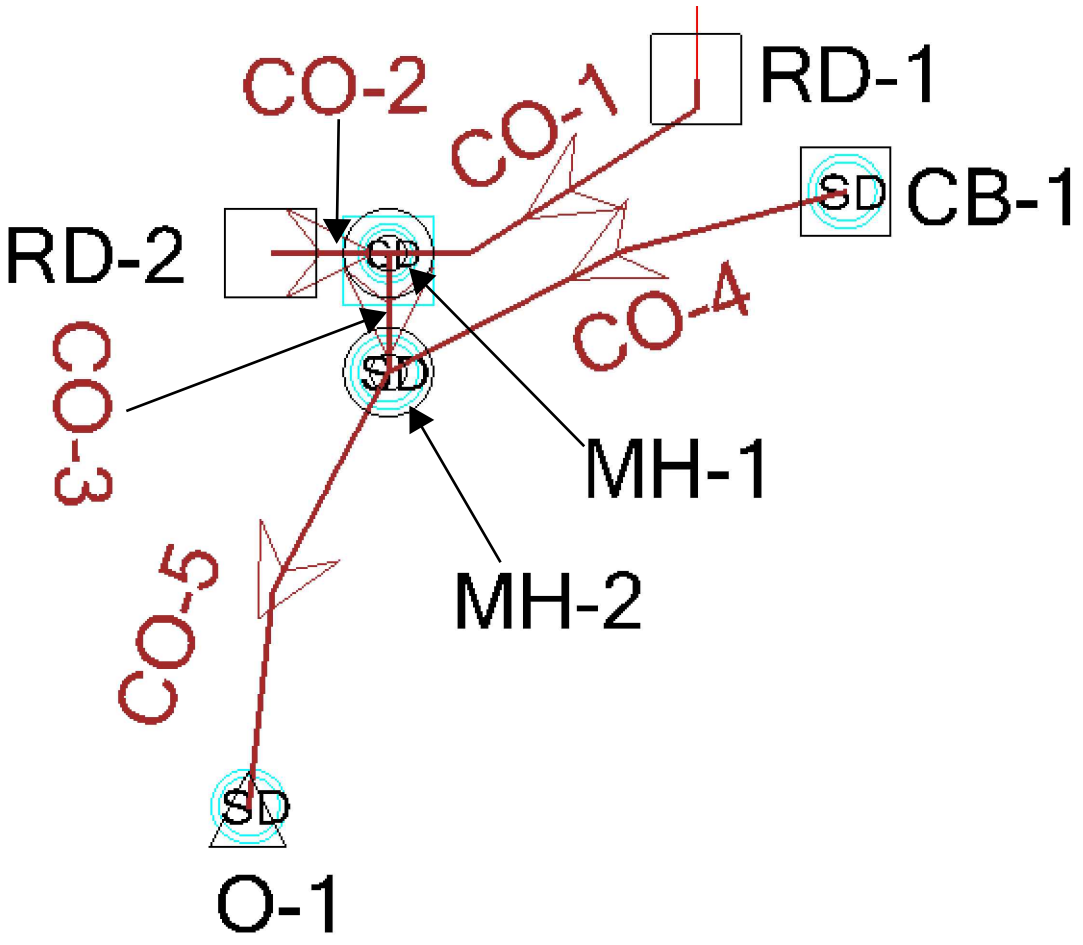
Notes: Systems may be sized based on a water quality flow (i.e. 1-inch design storm) or on net annual sediment load removal depending on local regulatory requirements.
Contact Kristar for the most accurate and cost effective sizing for your project location.

When sizing system based on a water quality flow, the required flow to be treated must be less than or equal to the Treated Flow Capacity for the selected unit.

360 Sutton Place, Santa Rosa, CA, 95407, (800) 579-8819
REV DVCC 020111

Appendix E

StormCAD Analysis



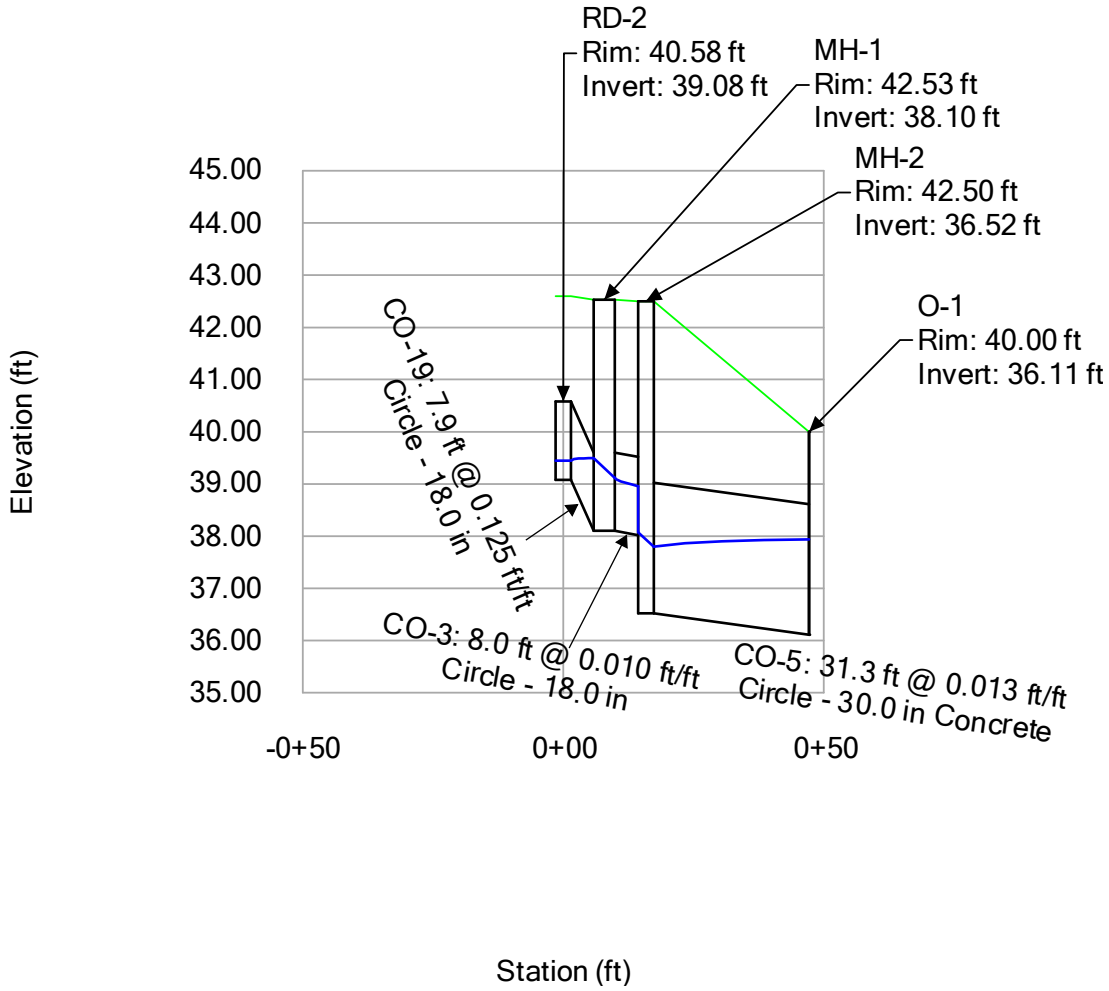
STORMCAD LAYOUT EXHIBIT

Kimley»Horn

Profile Report

Engineering Profile - 10-YR RD2 to O1 (Centum Health - StormCad (11-11-2020).stsw)

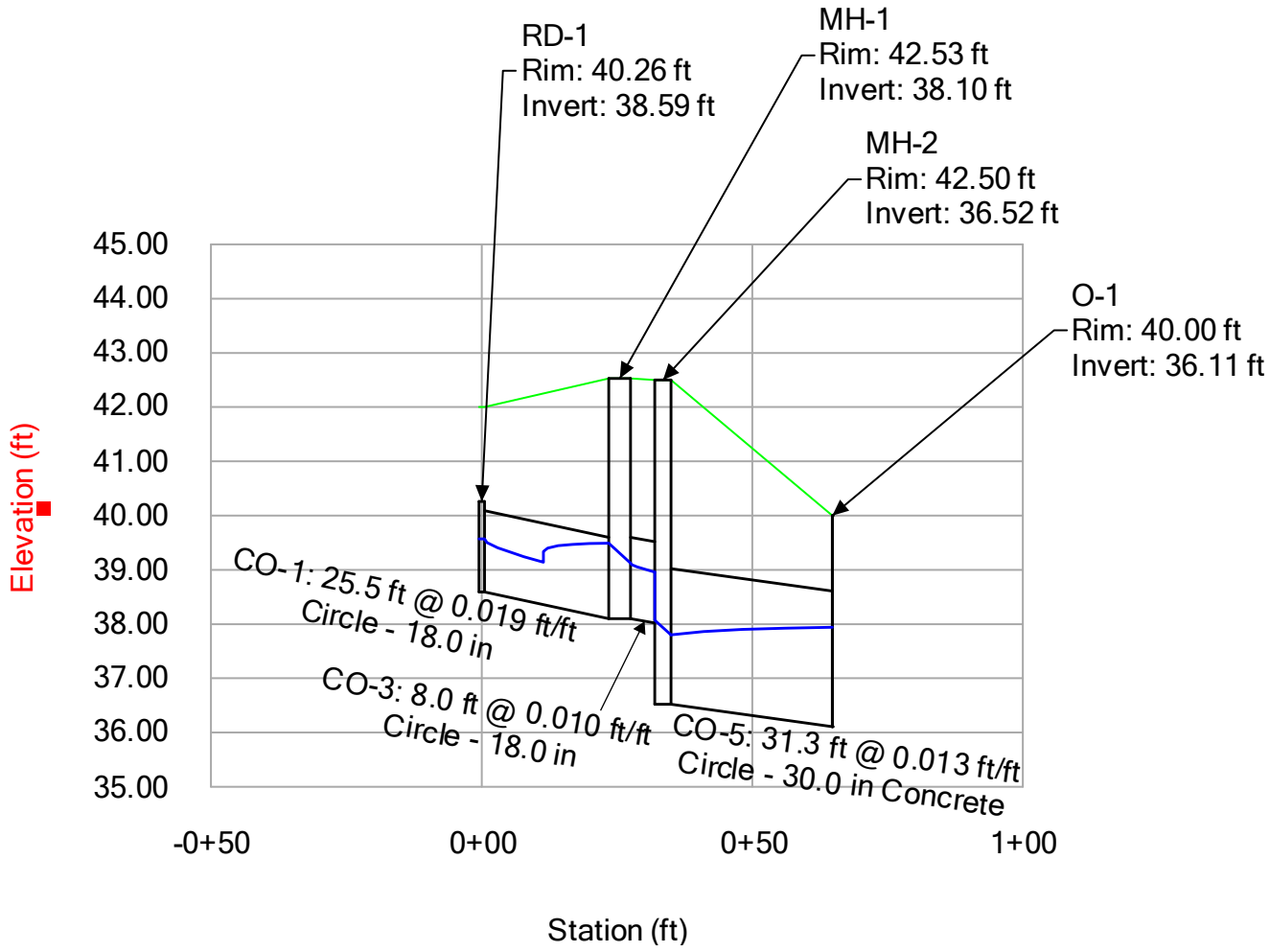
Active Scenario: 10-YR 2-HR



Profile Report

Engineering Profile - 10-YR RD1 to O1 (Centum Health - StormCad (11-11-2020).stsw)

Active Scenario: 10-YR 2-HR



FlexTable: Conduit Table

Active Scenario: 10-YR 2-HR

Label	Start Node	Stop Node	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Cover (Start) (ft)	Cover (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Velocity (ft/s)
CO-4	CB-1	MH-2	33.2	0.010	4.88	40.89	36.85	36.52	40.38	42.50	1.03	3.48	38.06	38.07	5.61
CO-5	MH-2	O-1	31.3	0.013	11.88	46.95	36.52	36.11	42.50	40.00	3.48	1.39	37.80	37.94	7.98
CO-3	MH-1	MH-2	8.0	0.010	7.00	10.51	38.10	38.02	42.53	42.50	2.93	2.98	39.12	38.96	6.37
CO-1	RD-1	MH-1	25.5	0.019	6.40	14.56	38.59	38.10	42.00	42.53	1.91	2.93	39.57	39.49	7.98
CO-2	RD-2	MH-1	7.9	0.125	0.60	37.09	39.08	38.10	42.60	42.53	2.02	2.93	39.45	39.49	7.80

FlexTable: Manhole Table

Active Scenario: 10-YR 2-HR

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Headloss Coefficient (Standard)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Known) (cfs)
MH-1	42.53	38.10	0.800	7.00	39.49	39.12	0.00
MH-2	42.50	36.52	0.800	11.88	38.07	37.80	0.00

FlexTable: Outfall Table

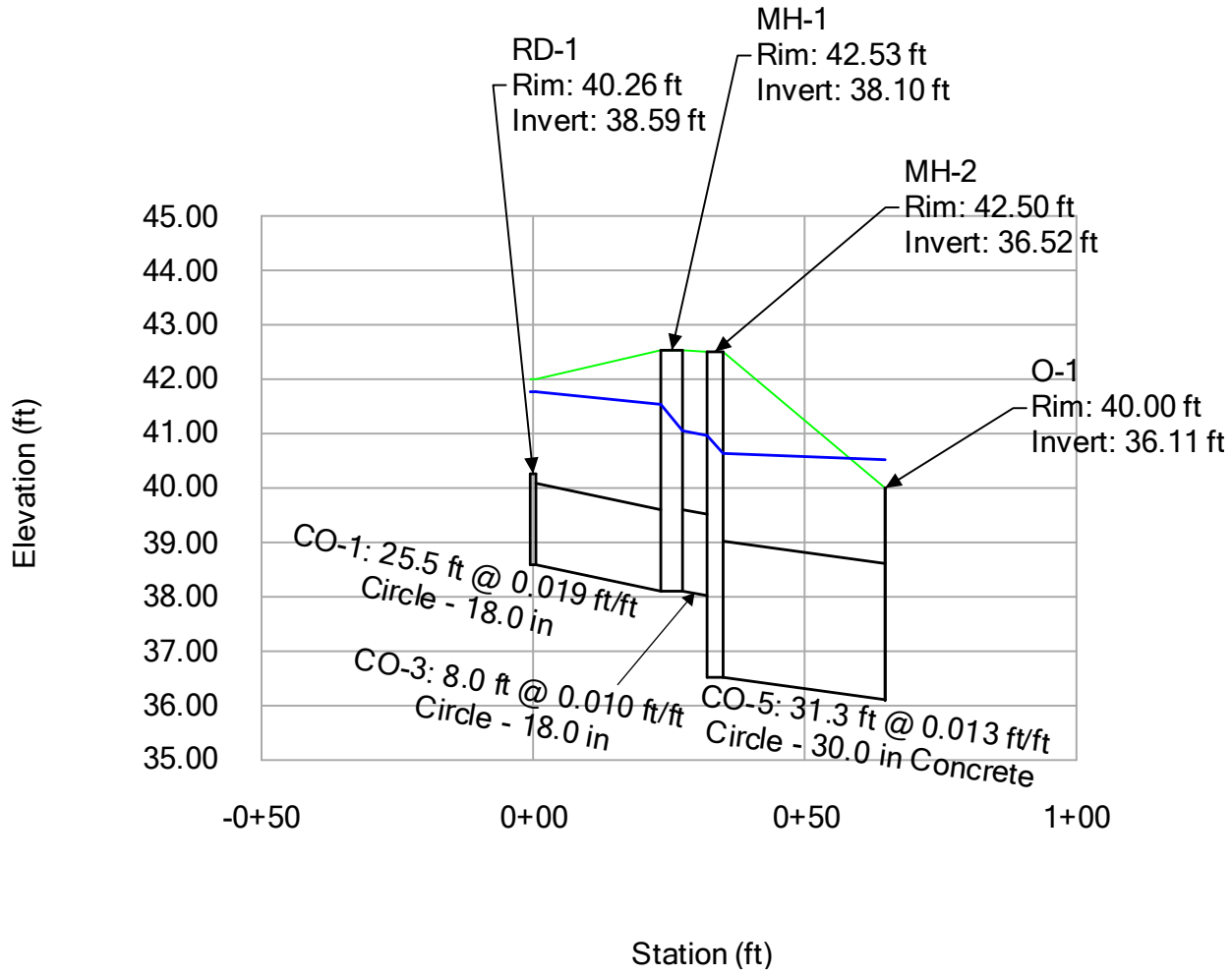
Active Scenario: 10-YR 2-HR

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Hydraulic Grade (ft)	Flow (Total Out) (cfs)
O-1	40.00	36.11	User Defined Tailwater	37.94	11.88

Profile Report

Engineering Profile - 100-YR RD1 to O1 (Centum Health - StormCad (11-11-2020).stsw)

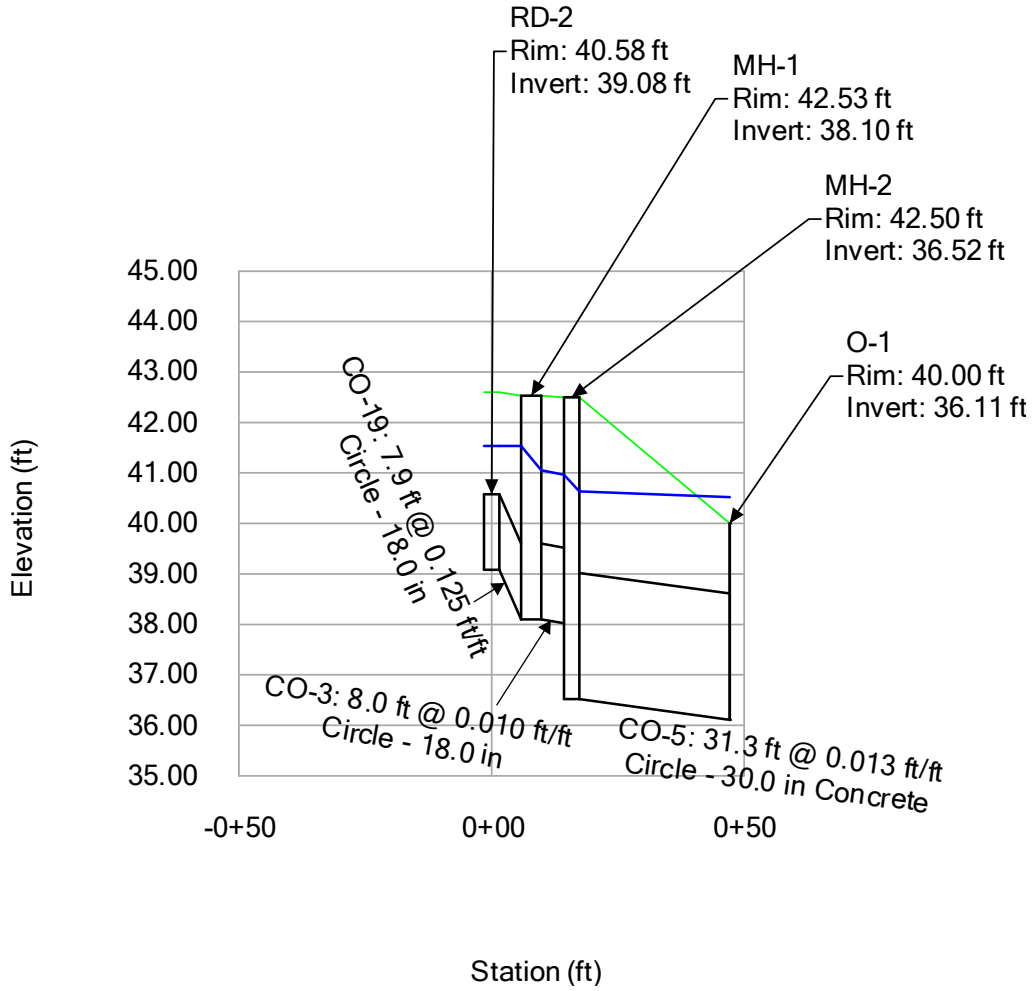
Active Scenario: 100-YR 2-HR



Profile Report

Engineering Profile - 100-YR RD2 to O1 (Centum Health - StormCad (11-11-2020).stsw)

Active Scenario: 100-YR 2-HR



FlexTable: Conduit Table

Active Scenario: 100-YR 2-HR

Label	Start Node	Stop Node	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Cover (Start) (ft)	Cover (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Velocity (ft/s)
CO-4	CB-1	MH-2	33.2	0.010	14.20	40.89	36.85	36.52	40.38	42.50	1.03	3.48	41.01	40.97	2.89
CO-5	MH-2	O-1	31.3	0.013	25.20	46.95	36.52	36.11	42.50	40.00	3.48	1.39	40.64	40.52	5.13
CO-3	MH-1	MH-2	8.0	0.010	11.00	10.51	38.10	38.02	42.53	42.50	2.93	2.98	41.05	40.97	6.22
CO-1	RD-1	MH-1	25.5	0.019	10.00	14.56	38.59	38.10	42.00	42.53	1.91	2.93	41.77	41.54	5.66
CO-2	RD-2	MH-1	7.9	0.125	1.00	37.09	39.08	38.10	42.60	42.53	2.02	2.93	41.54	41.54	0.57

FlexTable: Manhole Table

Active Scenario: 100-YR 2-HR

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Headloss Coefficient (Standard)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Known) (cfs)
MH-1	42.53	38.10	0.800	11.00	41.54	41.05	0.00
MH-2	42.50	36.52	0.800	25.20	40.97	40.64	0.00

FlexTable: Outfall Table

Active Scenario: 100-YR 2-HR

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Hydraulic Grade (ft)	Flow (Total Out) (cfs)
O-1	40.00	36.11	User Defined Tailwater	40.52	25.20

Appendix F

Exhibits

NORTH

GRAPHIC SCALE IN FEET
0 100 200 400

LEGEND

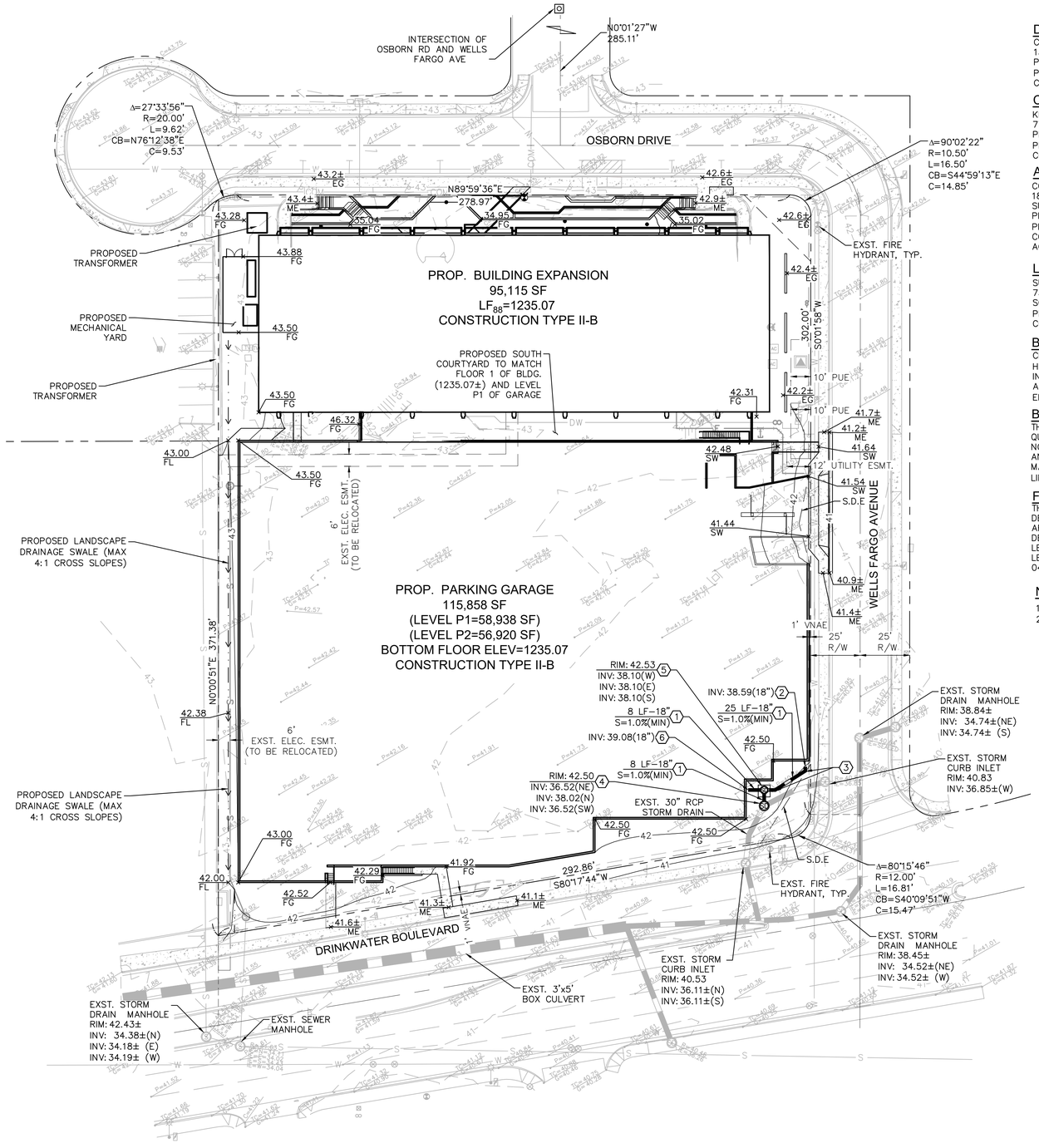
SCOTTSDALE MEDICAL PAVILION CONDOMINIUM

FIGURE 1: CONTEXT AERIAL PLAN

Kimley»Horn

K:\PHX_Civil\291247001 - Centum Health Scottsdale\CADD\Exhibits\DR Context Arial.dwg Apr 10, 2020 Ayanna.Harris

14-DR-2020
11/12/2020
12/17/20



DEVELOPER/OWNER
CENTUM HEALTH PROPERTIES
1300 NORTH 12TH STREET SUITE 513
PHOENIX, AZ
PH: (503) 954–7287
CONTACT: STU MONSON

CIVIL ENGINEER
KIMLEY–HORN AND ASSOCIATES, INC.
7740 N. 16TH STREET, SUITE 300
PHOENIX, ARIZONA 85020
PH: (602) 678–3403
CONTACT: JEFF BOYD, PE

ARCHITECT
CORGAN
1850 NORTH CENTRAL AVENUE,
SUITE 300
PHOENIX, AZ 85004
PH: (602) 302–6400
CONTACT: SHANE WILLIAMS, AIA, ACHA, LSS

LAND SURVEYOR
SURVEY INNOVATION GROUP, INC
7301 EAST EVANS ROAD
SCOTTSDALE, ARIZONA 85260
PH: (480) 922–0780
CONTACT: JASON SEGNERI, P.L.S.

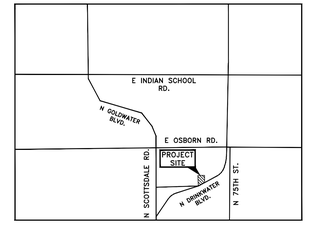
BENCHMARK
CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE 0.4' DOWN AT THE INTERSECTION OF SCOTTSDALE ROAD AND OSBORN ROAD
ELEVATION = 1246.67' (NAVD–88)

BASIS OF BEARING
THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 26, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA. SAID LINE BEARS S89°50'05"W.

FLOOD INFORMATION
THE FLOOD ZONE DESIGNATION FOR THIS AREA IS ZONE X. DEFINED AS: AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD MAP NUMBER 04013C2235L L, REVISED OCTOBER 16, 2013.

NOTES
1. ADD 1200' TO ALL ELEVATIONS.
2. ADD 0.5' TO PAVEMENT (P) ELEVATIONS TO OBTAIN TOP OF CURB ELEVATIONS, UNLESS OTHERWISE NOTED.

GRADING AND DRAINAGE NOTES
1. HDPE STORM DRAIN PIPE. SIZE AND SLOPE PER PLAN.
2. CONNECT TO GRAVITY ROOF DRAIN STUB FROM BUILDING AND GARAGE. REFER TO MEP PLANS FOR CONTINUATION. INVERT PER PLAN.
3. HDPE STORM DRAIN BEND.
4. REMOVE EXISTING CATCH BASIN AND INSTALL 60" STORM DRAIN MANHOLE PER MAG STD DET 521 AND 522.
5. DVS–60 SQUARE OLDCASTLE DUAL VORTEX SEPARATOR.
6. CONNECT TO STORM SEWER PUMP DISCHARGE LINE STUB FROM BELOW GRADE COURTYARDS AND BELOW GRADE GARAGE LEVEL P1. REF TO MEP PLANS FOR CONTINUATION. INVERT PER PLAN.



VICINITY MAP
SCOTTSDALE, AZ
N.T.S.

LEGEND
- PROPERTY LINE
- RIGHT OF WAY LINE
- STREET CENTERLINE
- EASEMENT LINE
- S — EXISTING SEWER MAIN
- W — EXISTING PUBLIC WATER MAIN
- W — PROPOSED WATER MAIN
- S — PROPOSED SEWER MAIN
- PROPOSED STORM DRAIN
- EXSTING STORM DRAIN
- HP — HIGH POINT
- 12 — PROPOSED CONTOUR
- 2 — EXISTING CONTOURS
- FLOW LINE
- 10.00 P — PROPOSED PAVEMENT SPOT ELEVATION
- TC=43.98 G=43.58 — EXISTING SPOT ELEVATION
- EXISTING SANITARY SEWER MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED CATCH BASIN
- SD — PROPOSED MANHOLE/TREATMENT DEVICE

Kimley»Horn
© 2020
7740 North 16th Street,
Suite 300
Phoenix, Arizona 85020
(602) 944–5500

	ISSUES
1	
2	
3	

	REVISIONS

PRELIMINARY
FOR REVIEW ONLY
NOT FOR CONSTRUCTION
Kimley»Horn
ENGINEER JEFF BOYD
PE NO. 67407 DATE 11/20

SCALE (H):	1"=30'
SCALE (V):	NONE
DRAWN BY:	JCB
DESIGN BY:	JCB
CHECK BY:	MLD
DATE:	11/11/2020

Centum Scottsdale MOB Core and Shell
7331 E Osborn Dr.
Scottsdale, AZ 85251

KEYPLAN

PRELIMINARY GRADING & DRAINAGE PLAN

JOB	291247001
DATE	11/11/2020
SHEET	23.7

NORTH
GRAPHIC SCALE IN FEET
0 15 30 60

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

14-PR-2020
14-DR-2020 V3
12/17/20

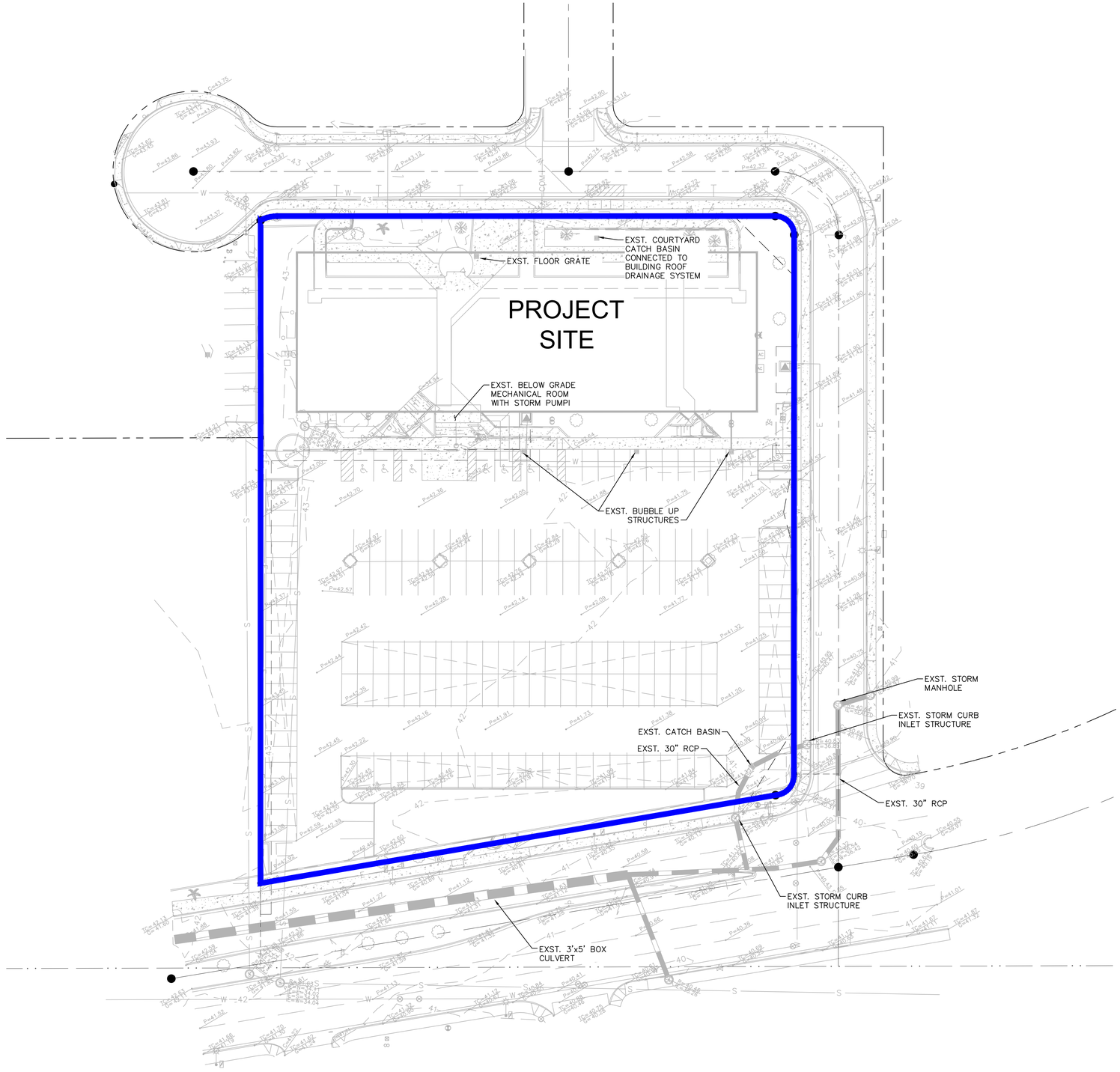


FIGURE 3: EXISTING CONDITIONS MAP

Kimley»Horn

FIGURE 4: DRAINAGE AREA MAP

K:\PHX_Civil\291247001 – Centum Health Scottsdale\CADD\Improvement Plans\247001DR.dwg Nov 10, 2020 Jeff.Boyd

PRELIMINARY DRAINAGE REPORT

Plan # 14-DR-2020, Cycle V1

Case # _____

Q-S # _____

_____ Accepted

__X__ Correction

GA 05/11/020
Reviewed By Date

Centum Health
Scottsdale, Arizona

Prepared for:

Centum Health Properties
1300 N. 12th St. Suite 513
Phoenix, AZ 85006

Prepared by:

Kimley»Horn

291247001
April 2020

14-DR-2020
11/12/2020

PRELIMINARY DRAINAGE REPORT

Centum Health
Scottsdale, Arizona

April 15, 2020

Prepared for:

Centum Health Properties
1300 North 12th Street, Suite 513
Phoenix, Arizona 85006

Prepared By:

Kimley-Horn and Associates, Inc.
7740 N. 16th Street, Suite 300
Phoenix, Arizona 85020

291247001
April 2020

Section **Page No.**

List of Appendices

List of Figures in Appendix E (Exhibits)

1.0 Introduction

1.1 Project Description

Centum Health Properties is proposing to redevelop and expand the existing medical office building located at 7331 E. Osborn Road in Scottsdale. The plans include adding approx. 46,315 square feet to the existing building to square off the existing triangular structure and constructing a two-level parking deck in place of the existing surface parking lot.

1.2 Site Location

The proposed development encompasses approximately 2.4 net acres in a portion of the Southwest Quarter of Section 26, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. The site is zoned C-3 and is currently part of the Scottsdale Medical Pavilion Condominium.

1.3 Purpose

This Preliminary Drainage Report is intended to satisfy City of Scottsdale requirements. This report provides a description of the current storm water drainage patterns and systems as well as a description of the required and proposed drainage improvements.

1.4 Objectives

This report provides a drainage plan for the site that is intended to meet the drainage standards and guidelines of the City of Scottsdale. This report will demonstrate the following:

1. The existing site drainage patterns will experience minimal alteration.
2. The existing site is not in a floodplain.
3. Off-site flows do not impact the site.
4. In accordance with the City of Scottsdale Design Standards & Policies, with the redevelopment of the existing site being over 1 acre in size, first flush will be treated before being discharged.
5. Drainage facilities will be designed such that the 100-year post-development flows are collected and conveyed in such a manner to avoid damage to buildings and property.

2.0 Description of Existing Drainage Conditions and Characteristics

2.1 Existing Drainage Conditions

The site currently consists of a medical office building, surface parking lot, and minimal landscape. The site is bounded by existing Ashford Scottsdale apartments to the west, Osborn Drive to the north, Wells Fargo Avenue to the east, and Drinkwater Boulevard to the south.

The site generally slopes from the north to the south. There currently is not any site retention or surface runoff treatment. Building roof drains and below deck courtyard drains connect to bubble up structures along the north side of the existing surface parking lot. Below deck drains are sent through an existing pump in the mechanical room in the building and pumped up to the aforementioned bubble up structures in the existing surface parking lot. Water discharged from the bubble structures combine with surface flows from the existing parking lot and are conveyed via sheet flow to the southeast corner of the site where they are collected by a catch basin. Said catch basin connects to 30" RCP storm sewer that ultimately discharges into the city storm sewer in Drinkwater and sent west via 3'x5' box culvert.

2.2 Existing Off-Site Drainage Conditions

There are no off-site flows that impact the site. Drainage north and east of the site are contained via existing road improvements and picked up via curb inlet scuppers in Wells Fargo Ave. The west adjacent parcel is separated by a screen wall that blocks any flow into the site development area. Drinkwater to the south is the site's ultimate outfall and drainage is collected into the city's storm sewer.

2.3 Context Relative to Adjacent Projects and Improvements

The site is bounded by existing Ashford Scottsdale apartments to the west, Osborn Drive to the north, Wells Fargo Avenue to the east and Drinkwater Boulevard to the south. See Figure 1 in ***Appendix F*** for Context Aerial of the site.

2.4 FEMA Flood Hazard Areas

The site is located in Flood Zone "X" according to the Flood Insurance Rate Map 040132C2235L, dated October 16, 2013. Zone "X" is designated by FEMA as "areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood."
Refer to ***Appendix B*** for the FEMA FIRM map for the site.

3.0 Proposed Drainage Plan

3.1 General Description

In the analysis of the proposed drainage conditions the following items are considered:

- Area Types (concrete pavement, building, and desert landscaping)
- Magnitude of areas
- Slopes
- Storm Drain
- Alternate First Flush Treatment Device

Note that the HAG and LAG callout on exibits in Appendix E are typical for sites in fFEMA special flood hazard zone that require elevation certificates. These can be removed

3.2 Proposed Site Conditions

The site proposes a combination detention for the 100-year, 2-hour storm event within the landscape areas and first flush treatment for drainage collected from the building and garage before discharging to city storm sewer.

Site-generated storm water from areas west and east of the building/garage will be conveyed to a depressed landscape detention basin. This depressed landscape basin is sized not to hold more than 6-inches of water based on a 100-year, 2-hour storm event.

Site generated storm water from the below grade courtyard north of the building will continue to be collected via storm drain, sent to the building, and connect to the building's new roof drains. The water will then continue on to the existing storm sump pump in the building and will discharge to the eastside of the building. Once discharged, the storm water will be picked up by a 24" storm sewer pipe and is sent south through an Oldcastle Dual Vortex Separator Structure for First Flush Treatment before ultimately discharging into the existing 30" Public Storm Sewer via new manhole connection on the SE corner of the site.

Site generated storm water from the garage will be conveyed via sheet flow to a series of deck drains and sent east to connect to the proposed 24" storm sewer running adjacent to the garage to be treated for First Flush. Drainage within the below grade parking floor with be conveyed via sheet flow to a series of deck drains and pumped to connect to the aforementioned 24" storm sewer running adjacent to the garage to be treated for First Flush ultimately discharging into the existing 30" Public Storm Sewer via new manhole connection on the SE corner of the site.

Section 3.4 indicates no retention is required because the site is already developed. Section 3.2 discusses 100-year, 2-hour retention in landscaped areas. The city of Scottsdale stormwater storage requirements for already developed site is to provide the 100-year, 2-hour stormwater storage for the difference between post and pre-development conditions. If the site was totally impervious or has more previous surfaces in post development conditions, at a particular concentration point, then there will be no stormwater storage requirements. It is not clear why the retention volumes in these landscaped areas are referred to as required. If they are required per above discussion, then revise section 3.4 accordingly; if the are not required but provided as part of the landscaping plans and since ther are limited to 6" in depth, just expain that these depressions are provide and they are less than 6" and, accordingly there should be no concern with drain time. As these depressions are sized for the 100-year, 2-hour , they would be adequate to accommodate the corresponding first flush volume. Please note that in the City of Scottsdale, the runoff coefficient used in the first fluch calculations is not 1.0, it is rather the normal weighted coefficient based on land surfaces.

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3.3 Proposed Off-Site Conditions

Off-site storm water impacts are not anticipated. As discussed in existing off-site conditions, drainage north and east of the site are contained via existing road improvements and picked up via curb inlets scuppers in Wells Fargo Ave.

3.4 Storm Water Storage Requirements

The site does not require detention because the site is already developed, but since the site is greater than an acre in size, First Flush Treatment is required. As described in the proposed site conditions, First Flush will be handled by an Oldcastle Dual Vortex Separator Structure and treat flows form the north courtyard, building, and garage. However, portions of the site are designed to provide detention volume for the 100-year, 2-hour rainfall event in landscape areas. These small depressed landscape detention basins are sized so that the water detained is not more than 6-inches in depth based on 100-yr, 2-hour flows and thus do not need drywell or percolation test.

Table 1 below summarizes the on-site detention provided for the site.

Table 1: On-Site Detention Volume Required

Basin	Land Use	Runoff Coefficient	Drainage Area (ft^2)	Required Volume (ft^3)
Basin (Area 5)	Landscaping	0.45	9,500	770
Basin (Area 25)	Landscaping	0.45	1,850	150
Total			11,350	920

3.5 Proposed Drainage Structures or Special Drainage Facilities

A storm water pump will be used in the garage to convey storm water from the below grade runoff and connect to the proposed 24” storm sewer adjacent to the east side of the garage.

An Oldcastle Dual-Vortex Separator will be installed immediately upstream of the connection to the existing 30” City Storm Sewer.

The building has existing finished floor elevations below grade with level one at 1235.07’ and 1246.03’ at the second level. Per the FEMA map, this area is located in Zone X which is defined as areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood.

The entrance to the lower level of the parking garage has been set to match level one of the existing building finish floor at 1235.07’.

Topographic survey conducted in 2020 was used as the basis to determine the natural grade. This survey data reflects the grades of the area prior to the this proposed redevelopment. Refer to Figure 5 ***Appendix E*** for the HAG Exhibit.

3.6 ADEQ AZPDES requirements

A Notice of Intent (NOI) will be submitted to Arizona Department of Environmental Quality (ADEQ) in conformance with the Arizona Pollution Discharge Elimination System Permit (AZPDES) permit. The NOI and associated storm water management best management practices will remain active on the site until construction is complete and a Notice of Termination is filed with ADEQ in conformance with AZPDES permit.

3.7 Project Phasing

This project will be constructed in a single phase.

4.0 Data Analysis Methods

4.1 Hydrologic Procedures, Parameter Selection, and Assumptions

Hydrologic calculations for the site were performed using the rational equation in the FCDMC Drainage Design Manual Volume I, which is limited to drainage areas of up to 160 acres. A weighted runoff coefficient was used for the site based upon the large amount of landscaping located adjacent to perimeters of the site.

For analysis of the development, the site was sub-divided into five sub-basins consisting of the parking garage, landscaping, and building. For each sub-basin, the Rational equation will be used to calculate the peak flow at each concentration point for each basin. Refer to Figure 4 in ***Appendix E*** for the Drainage Area Map.

4.2 Hydraulic Procedures, Methods, Parameter Selection, and Assumptions

All flows for proposed conditions will be determined using the rational method as outlined by the Drainage Design Manual by Maricopa County Flood Control District. Due to the small nature of the watersheds for the individual sub-basins, a minimum time of concentration of five minutes will be assumed. All of the drainage basins assume a runoff coefficient of 0.95 with the exception of the landscape which are assumed a runoff coefficient of 0.45 per the City of Scottsdale Design Standards and Policy Manual.

10 minutes is the minimum Tc in Scottsdale

This paragraph discusses hydrologic elements and should be moved to Section 4.1

The following criteria will be used to size the proposed pipes for on-site storm water conveyance:

- A maximum allowable 100-year ponding depth of six inches above the catch basin grate.
- A minimum of 12 inches of freeboard between the 100-year ponding depth and the building finish floor elevation.
- The tailwater condition for the 100-year event will be assumed to be the hydraulic grade line at the pipe connection location.
- The 10-year tailwater condition will be assumed to be free outfall.

StormCAD analysis for the 10-year and 100-year events will be provided with the final drainage report.

Storm drain catch basins will be sized using Figure 3.29 from the FHWA HEC-12 dated 1984. A 50% clogging factor will be applied in the analysis.

This project proposes to utilize an Oldcastle Dual-Vortex Separator to maintain storm water quality. These units are designed to treat the first flush of storm water before it enters the

existing 30" City Storm Sewer. A 60-inch diameter Oldcastle Dual-Vortex storm water quality unit will be installed and has been sized to accommodate the first flush flows from the site, and to bypass flows in excess of the first flush. Refer to ***Appendix D*** for cut sheet of Treatment Structure.

4.3 Storm Water Storage and First Flush Treatment Calculation Methods and Assumptions

As described previously, the site does not require detention because the site is already developed, but since the site is greater than an acre in size First Flush Treatment is required. However, detention has been provided on site for the landscape areas adjacent to the east and west sides of the proposed garage. The standard formula for determining the required storage volumes for the 100-year, 2-hour storm is as follows:

Equation 2: Standard Formula for On-Site Storage Requirement

$$V_R = CPA/12$$

Where: V_R = storage volume required (acre-feet)

C = weighted runoff coefficient

P = precipitation depth for 100-year, 2-hour event = 2.16 inches

A = contributing drainage area to basin (acres)

Refer to ***Appendix C*** for Storm Water Detention Calculations, and Figure 4 in ***Appendix E*** for the Drainage Area Map.

For First Flush Treatment, this project proposes the utilization of an Old Castle Dual-Vortex Separator to treat the flow from the first flush and convey the 100-year 2-hour flow to the existing 30" storm drain to the southeast of the site.

The first flush flow rates are determined based on the City of Phoenix Storm Water Policies and Standards section 6.8.3 with modifications per Hasan Mushtaq and Keith Kesti using the following equation:

Equation 3: Standard Formula for First Flush Flow Rate

$$Q_{FF} = C*I*A$$

Where:

Q_{FF} = minimum first flush discharge in cfs

City of Scottsdale DSPM should be referenced and used for first flush requirements, not the City of Phoenix. See earlier comment on runoff coefficient "C". I=0.5 is used for first flush calculations

C = runoff coefficient (set to 1.00 for first flush condition)

A = tributary drainage area in acres

I = NOAA 14 100-year 2-hour intensity multiplied by depth ratio (first flush depth divided by 100-year 2-hour depth) = 1.08(0.5/2.16) = 0.25

This method for calculating first flush flow has been proposed as a revision to the City of Phoenix Storm Water Policies and Standards and effectively reduces flow.

Aside from the first flush flow rate, the sizing of the Dual-Vortex Separator is dependent on the 100-year, 2-hour flows that will be conveyed through each structure.

The 100-year 2-hour flow rates are determined using the rational method and the City of Scottsdale Storm Water Policies and Standards. The sizing of the Old Castle Precast Dual-Vortex Separator is based on the total flow and the first flush flow per the table shown in ***Appendix D***. Refer to Figure 4 ***Appendix E*** for tributary area #'s. See Table 2 below for the drainage area tributary to each concentration point, their corresponding first flush and total flow rates, and the storm water quality unit required to treat each area.

Flow (cfs)cfs

(cfs)

Table 2 – Storm Water Quality Unit Sizing

Tributary Area (Acres)	Time of Concentration	First Flush Treatment Req	100-Yr ~~2-Hr Flow Req.~~	Device Size	Frist Flush Treatment Prov.	100-Yr 2-Hr Flow ~~Prov.~~
Area 10 = 0.11	5.0	0.3	0.8	DVS-60C	2.50 CFS	16 CFS
Area 15 = 0.53	5.0	0.13	3.7			
Area 20 = 1.36	5.0	0.32	9.6			
Total		---	---			

Corrolate titles with those of the proposed device tables and Identify Model number proposed

5.0 Conclusion

5.1 Overall Project

Based on the results of this preliminary drainage report, the following can be concluded:

- No off-site drainage affects the site.
- Redevelopment of the site requires First Flush Treatment due to site being over an acre. First Flush will be handled by Oldcastle Dual-Vortex Separator Structure and be sized to handle 100-yr, 2-hour flows.
- The required detention volume for the adjacent landscape basins are sized off 100-yr, 2-hour storm event and will have depth no more than 6-inches thus not requiring drywell or percolation test.
- Based on the current Flood Insurance Rate Map (FIRM), the site is located in the Zone "X".

This preliminary drainage report is intended to provide a level of assurance that the site will adhere to all appropriate reviewing agency guidelines with respect to drainage and flood protection.

6.0 References

1. City of Scottsdale, *Design Standards and Policies Manual, Chapter 4: Grading and Drainage,* February 2018.

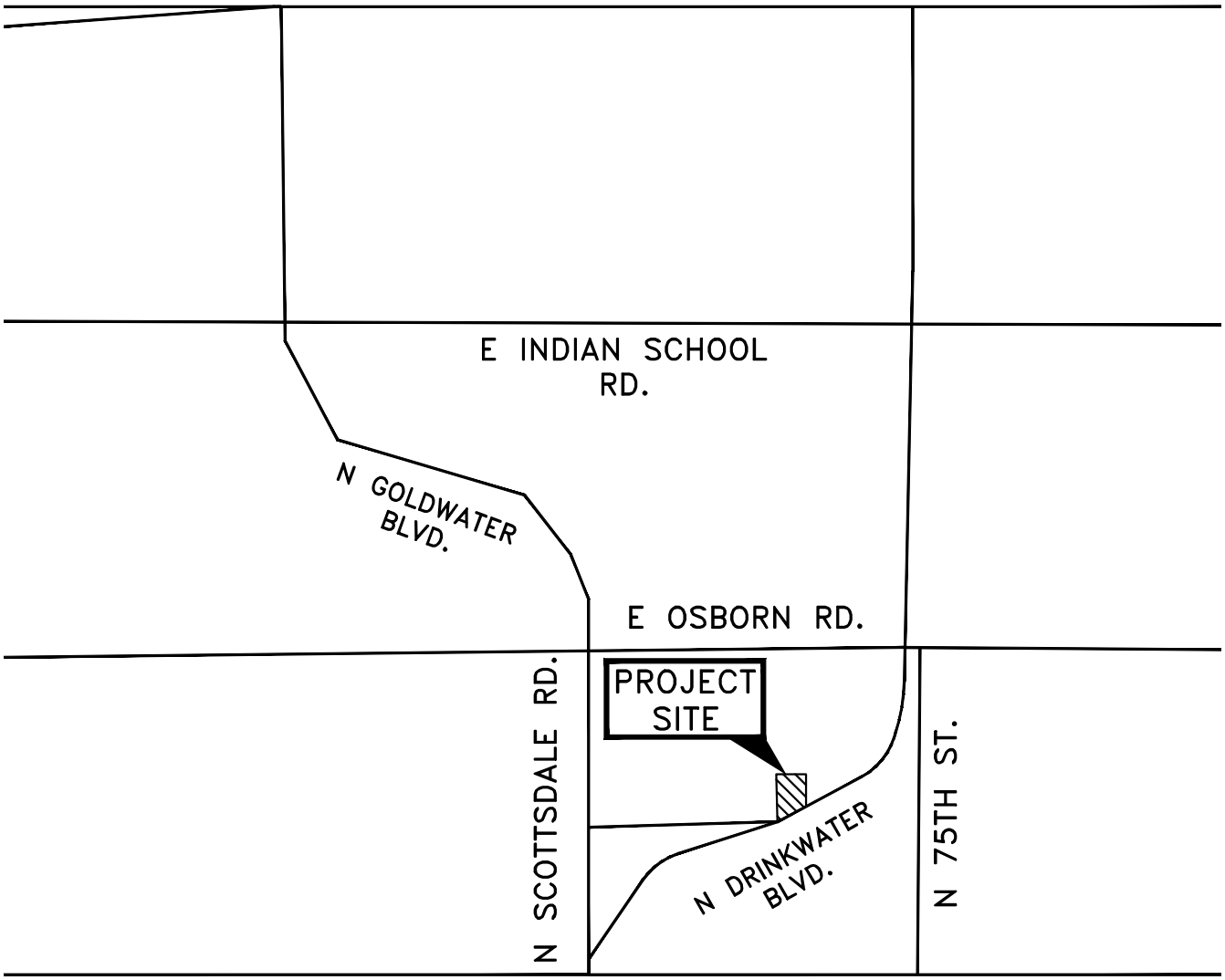
2. Federal Emergency Management Agency (FEMA), *Flood Insurance Rate Map (FIRM) of Maricopa County, Arizona and Incorporated Areas, Panel 1320 of 4425, Map Number 04013C1320L,* October 16,2013.

3. Flood Control District of Maricopa County (FCDMC), *Drainage Design Manual for Maricopa County, Hydrology Volume,* July 2018.

4. Flood Control District of Maricopa County (FCDMC), *Drainage Design Manual for Maricopa County, Hydraulics Volume,* July 2018

Appendix A

Site Location Map



NORTH

VICINITY MAP

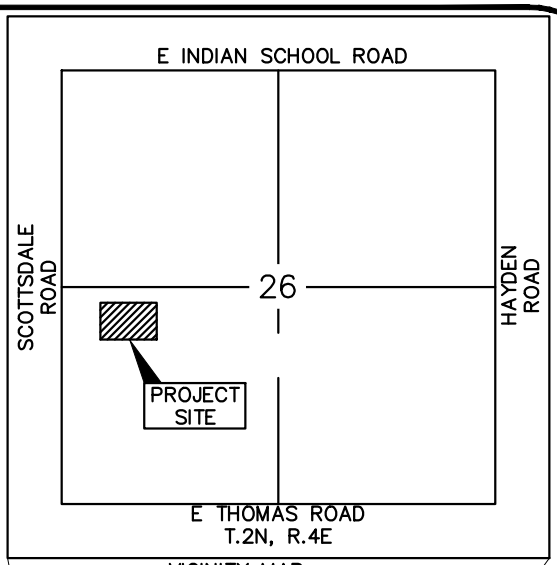
SCOTTSDALE, AZ
N.T.S.

Kimley»Horn

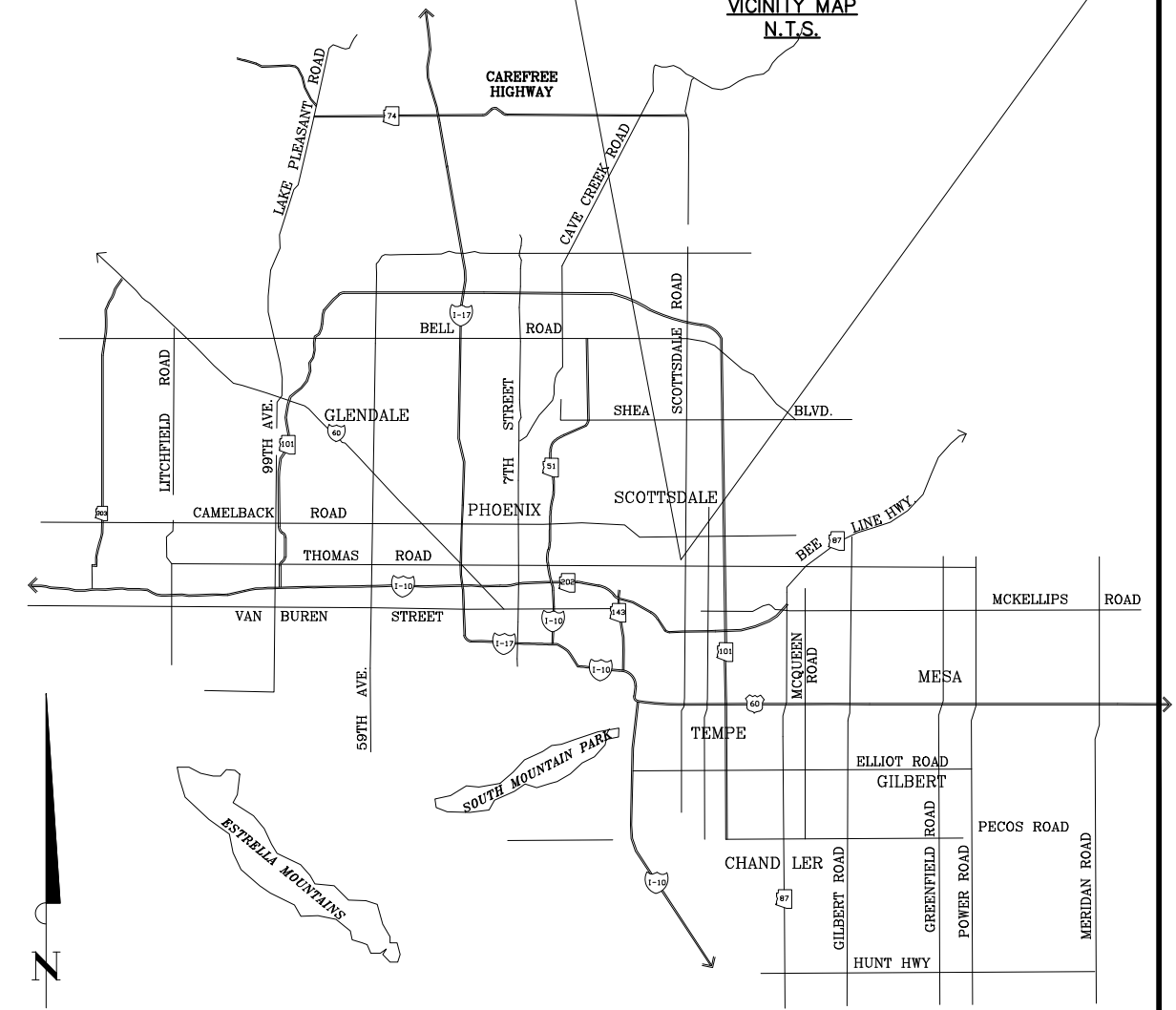
14-DR-2020
11/12/2020

PROJECT INFORMATION

SITE ADDRESS: 7331 E OSBORN DR,
Scottsdale, AZ 85251



VICINITY MAP
N.T.S.



(N.T.S.)

SITE LOCATION MAP

Kimley»Horn

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11/12/2020

Appendix B

FEMA Flood Insurance Rate Map (FIRM)

National Flood Hazard Layer FIRMette

FEMA

33°29'24.94"N

111°55'45.09"W

111°55'7.64"W

33°28'54.93"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/24/2020 at 12:35:35 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective unmapped and unmodernized areas can regulatory purposes.

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Appendix C

Hydrologic/Hydraulic Calculations

Peak Flow Calculations Using The Rational Method

Project:	Centum Health Scottsdale
Proj #:	291247001
Date:	4/14/20
Prep by:	JCB
Check by:	MLD

Base Sheet Prepared By GA, Version 2

Source of Rainfall Data --->NOAA Atlas 14

Rainfall Depth-Duration-Frequency (D-D-F), (inch)					
Storm Fequency	Time				
	5 min	10 min	15 min	30 min	60 min
10-Yr	0.39	0.59	0.74	0.99	1.23
100-Yr	0.62	0.94	1.17	1.57	1.95
Derived Rainfall Intensity-Duration-Frequency (I-D-F), (in/hr					
10-Yr	4.68	3.56	2.95	1.98	1.23
100-Yr	7.43	5.65	4.68	3.14	1.95

Attach source and supporting data for rainfall depths

AF for Cw per $Cw_{10\text{-}Yr}$		
Freq.	Typical	Applic.
2-Yr	1.00	1.00
5-Yr	1.00	1.00
10-Yr	1.00	1.00
25-Yr	1.10	1.00
50-Yr	1.20	1.00
100-Yr	1.25	1.00

AF=Frequency Adjustment Factor

Drainage Area ID: -----

Tc,calc method: 1=Papadakis and Kazan, 2=Avg Veloc. | 1 | Tc,calc=11.4*L^0.5*Kb^0.52*S^-0.31*i^-0.38

Cw for each frequency is adjusted as a function of the 100-year value per the table above

Concent. Point #	Contributing Sub-basins	Total Area (ac)	Base Cw (2-10 yr)	Flow Path, L (ft)	Approx High pt (ft)	Approx Low pt (ft)	Average Slope ft/ft	K_b Class A-->D	m	b	K_b	Initial/lot Tc (min)	10-Yr Minim allowed Tc,tot =			5.0	Q 10-Yr	100-Yr Minim allowed Tc,tot =			5.0	Q 100-Yr
													Cw AF=1.00	Tc,calc (min)	Tc,tot (min)	i (in/hr)	(cfs)	Cw AF=1.00	Tc,calc (min)	Tc,tot (min)	i (in/hr)	(cfs)
5		0.22	0.45	174	41.5	41	0.0029	A	-0.00625	0.04	0.0441	0	0.45	5.9	5.9	4.68	0.5	0.45	4.9	5.0	7.43	0.7
10		0.11	0.95	128	35.3	35.07	0.0018	A	-0.00625	0.04	0.0460	0	0.95	5.9	5.9	4.68	0.5	0.95	5.0	5.0	7.43	0.8
15		0.53	0.95	273	92.51	45.96	0.1705	A	-0.00625	0.04	0.0417	0	0.95	2.0	5.0	4.68	2.3	0.95	1.7	5.0	7.43	3.7
20		1.36	0.95	324	45.96	43.5	0.0076	A	-0.00625	0.04	0.0392	0	0.95	5.6	5.6	4.68	6.1	0.95	4.7	5.0	7.43	9.6
25		0.04	0.45	30	41.5	41	0.0167	A	-0.00625	0.04	0.0486	0	0.45	1.5	5.0	4.68	0.1	0.45	1.2	5.0	7.43	0.1

Centum Health Scottsdale- Basin Retention Summary								
Drainage Area	**Land Use**	**Area [A]**		**Runoff Coefficient [C]**	**Precipitation Depth [P]**	**Required Storage (V_{REQ} = CPA/12)**		**Retention Basin**
		sf	**ac**		**in**	**cf**	**ac-ft**	
5	Landscaping	9,500	0.218	0.45	2.16	770	0.018	Basin
25	Landscaping	1,850	0.042	0.45	2.16	150	0.003	Basin
TOTAL	**-**	**11,350**	**0.261**	**-**	**-**	**919**	**0.021**	**-**

Basin	Land Use	Runoff Coefficient	Drainage Area (ft^2)	Required Volume (ft^3)	Provided Volume (ft^3)	Surplus (ft^3)
Basin	Landscaping	0.45	9,500	770	1563	794
Basin	Landscaping	0.45	1,850	150	293	143
Total			11,350	920	1,856	937

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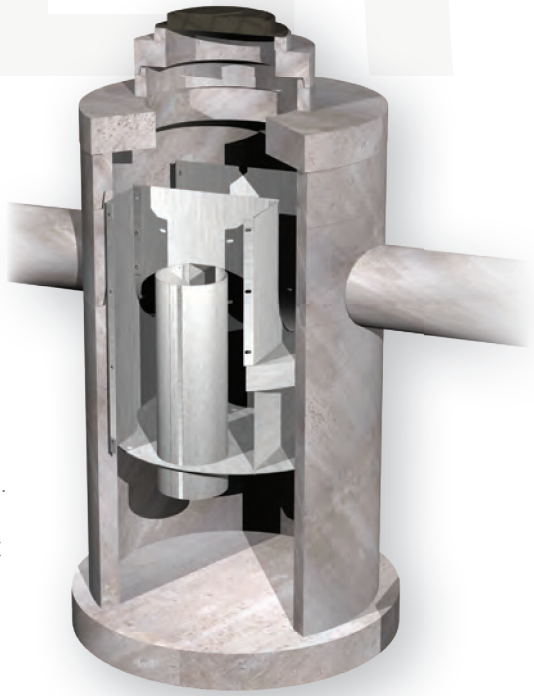
Appendix D

Old Castle Precast Dual-Vortex Separator Cut Sheet

Oldcastle Infrastructure™
A CRH COMPANY

STORM WATER

CYCLONIC Separation



Enhanced Gravity Separation of Stormwater Pollutants in a Compact Configuration

Dual-Vortex Efficiency

Particle settling is enhanced by circular flow patterns and a highly circuitous flow path created by two independent vortex cylinders.

Settled particles are collected in the isolated bottom storage area, while floating trash, debris and petroleum hydrocarbons are retained in the cylinders and upper storage areas.

During peak events, flows in excess of design treatment overtop the bypass weir and exit the system without entering the cylinders and lower storage area, thereby eliminating re-entrainment issues.

FEATURES:

- Maintenance Accessible Design
- Economical Installation
- Access Options
- Online System Capability
- Durable Construction
- Proven Performance
- Treatment Train

BENEFITS:

- Open access to accumulated floatables and sediment storage area
- Prepackaged and provided as compact round or square manholes
- Multiple access options (manhole cover or optional hinged lid)
- Internal high-flow bypass weir system provides for online or offline configurations
- Stainless-steel components installed in a reinforced concrete structure
- Third party tested and certified
- Can be installed upstream of infiltration, detention and retention systems or other treatment BMP's

Oldcastle Infrastructure™
A CRH COMPANY

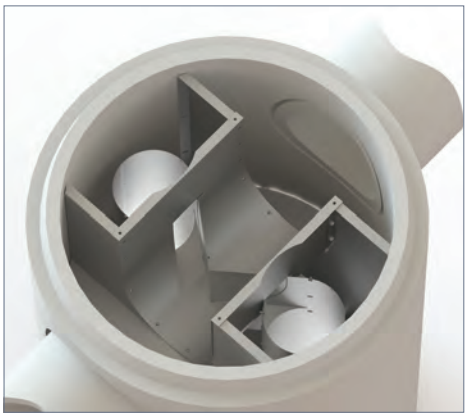
CYCLONIC
Separation

Dual-Vortex Separator Offers an Innovative, Economical Alternative for Removal of Suspended Pollutants from Stormwater Runoff

How it Works

STEP 1

Independent Vortex Cylinders & Control Weir - Flows are directed to the two independent vortex cylinders where particle settling is enhanced by circular flow patterns.



STEP 2

Captured Floatables - Floating trash, debris and petroleum hydrocarbons accumulate at the top of the two cylinders where they are held until transfer into the upper storage area by peak storm events.

STEP 3

Removal of Total Suspended Solids (TSS) - Particle settling is enhanced by the circular flow patterns and a highly circuitous flow path created by two independent vortex cylinders. Sediments are collected and retained in the isolated bottom storage area.

STEP 4

High-Flow Bypass - Flows in excess of the design treatment overtop the bypass weir and exit the system without entering the cylinders and re-entraining captured pollutants.

MODELS AND NOMINAL DIMENSIONS							
Model No.	Structure Diameter (ft.)	Standard Sump Depth* (ft.)	Minimum Rim to Invert Depth (ft.)	Sediment Storage* (cubic feet)	Oil and Floatable Storage (cubic feet)	NJCAT Treatment Flow Rate (cfs)	Maximum Treatment Flow Rate (cfs)
DVS-36	3	4.5	2.5	11	6	0.56	0.56
DVS-48	4	5.0	3.0	19	15	1.00	1.25
DVS-60	5	5.5	3.5	29	29	1.56	2.50
DVS-72	6	6.5	4.5	42	49	2.25	4.25
DVS-84	7	7.0	5.0	58	79	3.06	6.50
DVS-96	8	8.0	5.5	75	116	4.00	9.50
DVS-120	10	10.0	7.0	118	226	6.25	16.80
DVS-144	12	11.5	8.0	170	388	9.00	26.40

*Depth of unit can be increased to add storage capacity.

Available Options

Square configurations accept multiple inlet pipes or meet other special site conditions.

Flume inlet control for grated inlet applications.

(800) 579-8819
oldcastleinfrastructure.com

FloGard® Dual-Vortex Hydrodynamic Separator

Characteristics and Capacities (English)

Model	ID	Depth Below Invert	Treated Flow Capacity[1]			Total Flow Capacity[3]	Max. Pipe Size	Sediment Storage	Oil/ Floatable Storage
	ft	*ft*	*67 µm cfs*	*110 µm cfs*	*Peak[2] cfs*	*cfs*	*in*	*yd³*	*gal*
DVS-36	3	3.75	0.12	0.35	0.50	4	12	0.3	18
DVS-48	4	5.00	0.25	0.75	1.25	9	18	0.7	43
DVS-60	5	6.25	0.45	1.30	2.50	16	24	1.3	83
DVS-72	6	8.25	0.70	2.00	4.25	27	36	2.2	141
DVS-84[4]	7	9.50	1.00	3.00	6.50	40	42	3.5	294
DVS-96	8	10.75	1.40	4.20	9.50	57	48	5.3	337
DVS-120[4]	10	13.50	2.50	7.30	16.80	99	48	9.7	917
DVS-144[4]	12	16.00	3.90	11.60	26.40	154	60	15.5	1825

Characteristics and Capacities (Metric)

Model	ID	Depth Below Invert	Treated Flow Capacity[1]			Total Flow Capacity[3]	Max. Pipe Size	Sediment Storage	Oil/ Floatable Storage
	m	*m*	*67 µm L/s*	*110 µm L/s*	*Peak[2] L/s*	*L/s*	*mm*	*m³*	*L*
DVS-36	0.9	1.14	3.5	10	14	113	300	0.23	68
DVS-48	1.2	1.52	7	21	35	255	450	0.54	163
DVS-60	1.5	1.91	13	37	71	453	600	1.00	314
DVS-72	1.8	2.51	20	57	120	765	900	1.70	534
DVS-84[4]	2.1	2.90	30	85	184	1133	1050	2.70	1113
DVS-96	2.4	3.28	40	120	269	1614	1200	4.00	1276
DVS-120[4]	3.0	4.11	70	205	475	2800	1200	7.40	3471
DVS-144[4]	3.7	4.88	110	330	750	4360	1500	11.90	6908

[1]Treated Flow Capacity is based on 80% removal of suspended sediment with the approximate mean particle size shown. The appropriate flow capacity should be selected based on expected site sediment characteristics.
[2] Maximum flow prior to bypass. Correlates approximately to 80% removal of suspended sediment with a 250 µm particle size mean.
[3] Total design flow to the system should not exceed the Peak Flow Capacity.
[4]Call Kristar representative for availability in your area.

Notes: Systems may be sized based on a water quality flow (i.e. 1-inch design storm) or on net annual sediment load removal depending on local regulatory requirements.
Contact Kristar for the most accurate and cost effective sizing for your project location.

When sizing system based on a water quality flow, the required flow to be treated must be less than or equal to the Treated Flow Capacity for the selected unit.

360 Sutton Place, Santa Rosa, CA, 95407, (800) 579-8819
REV DVCC 020111

Appendix E

Exhibits

NORTH

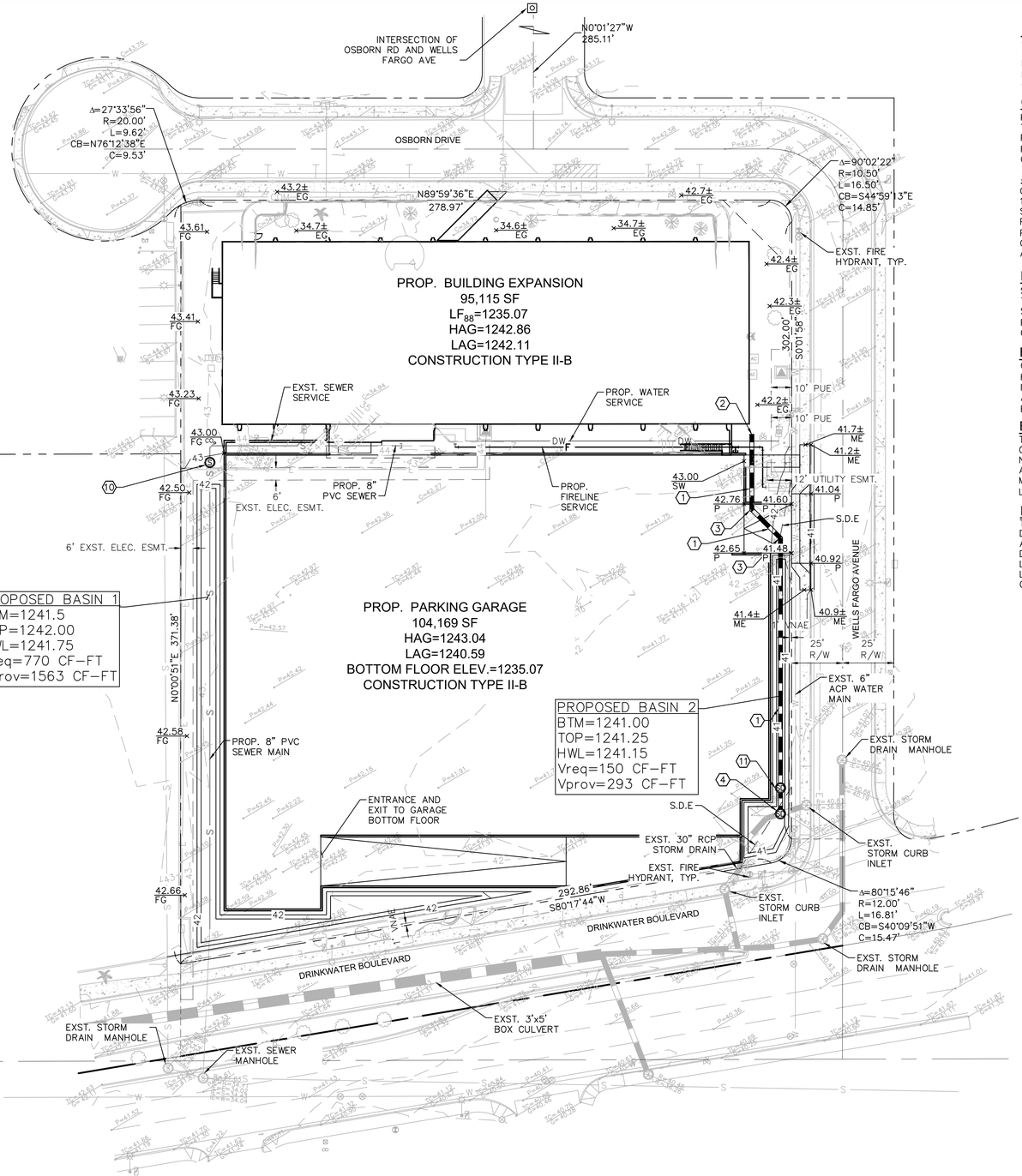
GRAPHIC SCALE IN FEET
0 100 200 400

LEGEND

SCOTTSDALE MEDICAL PAVILION CONDOMINIUM

FIGURE 1: CONTEXT AERIAL PLAN

Kimley»Horn



DEVELOPER/OWNER
CENTUM HEALTH PROPERTIES
1300 NORTH 12TH STREET SUITE 513
PHOENIX, AZ
PH: (469) 584-3966
CONTACT: GARY KIMNACH

CIVIL ENGINEER
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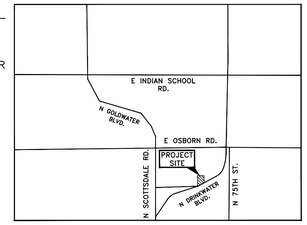
LAND SURVEYOR
SURVEY INNOVATION GROUP, INC
7301 EAST EVANS ROAD
SCOTTSDALE, ARIZONA 85260
PH: (480) 922-0780
CONTACT: JASON SEGNERI, P.L.S.

BENCHMARK
CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE 0.4' DOWN AT THE INTERSECTION OF SCOTTSDALE ROAD AND OSBORN ROAD
ELEVATION = 1246.67' (NAVD-88)

BASIS OF BEARING
THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 26, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA. SAID LINE BEARS S89°50'05"W.

FLOOD INFORMATION
THE FLOOD ZONE DESIGNATION FOR THIS AREA IS ZONE X. DEFINED AS: AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD MAP NUMBER 04013C2235L L, REVISED OCTOBER 16, 2013.

GRADING AND DRAINAGE NOTES
1. HDPE STORM DRAIN PIPE.
2. CONNECT TO BUILDING ROOF DRAIN WITH AIR BREAK. REFER TO MEP PLANS FOR CONTINUATION.
3. HDPE STORM DRAIN BEND.
4. 60" STORM DRAIN MANHOLE PER MAG STD DET 521 AND 522.
10. PROP. SEWER MANHOLE.
11. PROP. DVS 60 OLDCASTLE DUAL VORTEX SEPARATOR.



VICINITY MAP
SCOTTSDALE, AZ
N.T.S.

LEGEND
- PROPERTY LINE
- RIGHT OF WAY LINE
- STREET CENTERLINE
- EASEMENT LINE
- S — EXISTING SEWER MAIN
- W — EXISTING PUBLIC WATER MAIN
- W — PROPOSED WATER MAIN
- S — PROPOSED SEWER MAIN
- PROPOSED STORM DRAIN
- EXSTING STORM DRAIN
- HP — HIGH POINT
- 12 — PROPOSED CONTOUR
- 12 — EXISTING CONTOURS
- 10.00 P — PROPOSED PAVEMENT SPOT ELEVATION
- TC=42.50 G=42.00 — EXISTING SPOT ELEVATION
- EXISTING SANITARY SEWER MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED CATCH BASIN

NOTES
1. ADD 1200' TO ALL ELEVATIONS.
2. ADD 0.5' TO PAVEMENT (P) ELEVATIONS TO OBTAIN TOP OF CURB ELEVATIONS, UNLESS OTHERWISE NOTED.

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

Kimley»Horn © 2020
7740 North 16th Street, Suite 300
Phoenix, Arizona 85020 (602) 944-5500

77331 E OSBORN DR.

PRELIMINARY GRADING AND DRAINAGE PLAN

SCOTTSDALE, ARIZONA

PROJECT No. 291247001
SCALE (H): 1"=30'
SCALE (V): NONE
DRAWN BY: JCB
DESIGN BY: JCB
CHECK BY: XXX
DATE: 04/13/2020

PRELIMINARY
FOR REVIEW ONLY
NOT FOR CONSTRUCTION
Kimley»Horn
ENGINEER J. BOYD
PE NO. 67407 DATE 04/20

Pre-GD.dwg

SHEET 23.7

PLAN CHECK #XXXX-XX, XX-XX-XXXX

APPR | DATE | BY | DESCRIPTION | REV

K:\PHX_Civil\291247001 - Centum Health Scottsdale\CADD\Improvement Plans\Pre-GD.dwg, Layout:Layout1 Apr 15, 2020 - 11:47am jeff.Boyd
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14-DR-2020
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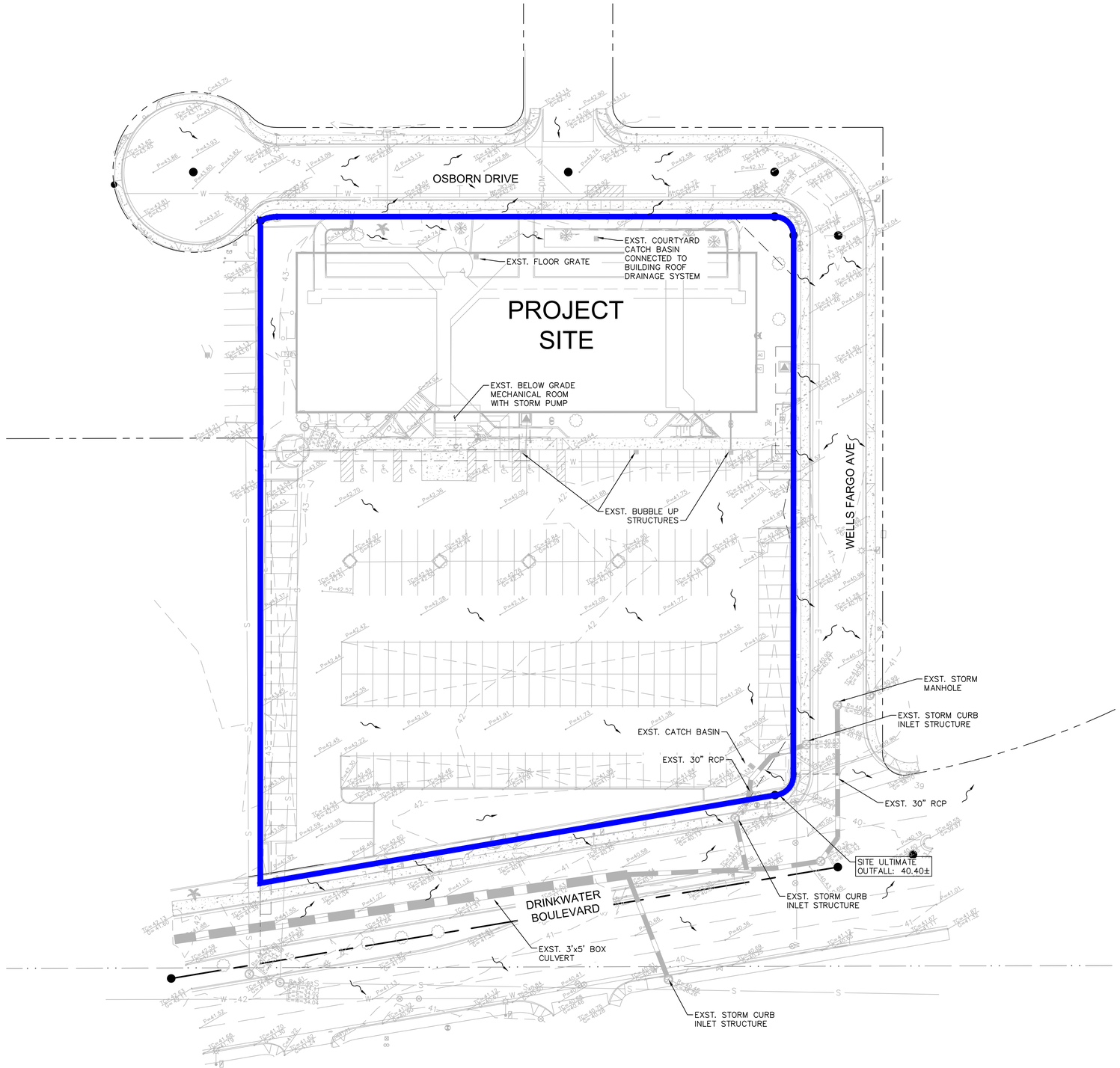

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

FIGURE 3: EXISTING CONDITIONS MAP

Kimley»Horn

OSBORN DRIVE

PROP. BUILDING EXPANSION
95,115 SF
CONSTRUCTION TYPE II-B

PROP. 2 LEVEL PARKING GARAGE
104,169 SF
CONSTRUCTION TYPE II-B

WELLS FARGO AVE

DRINKWATER BOULEVARD

LEGEND

- PROPERTY LINE
- RIGHT OF WAY LINE
- STREET CENTERLINE
- 12 PROPOSED CONTOUR
- 2 EXISTING CONTOURS
- (00) DRAINAGE AREA ID
- DRAINAGE AREA BOUNDARY
- DRAINAGE FLOW PATH

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

FIGURE 4: DRAINAGE AREA MAP

Kimley»Horn

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14-DR-2020
11/12/2020

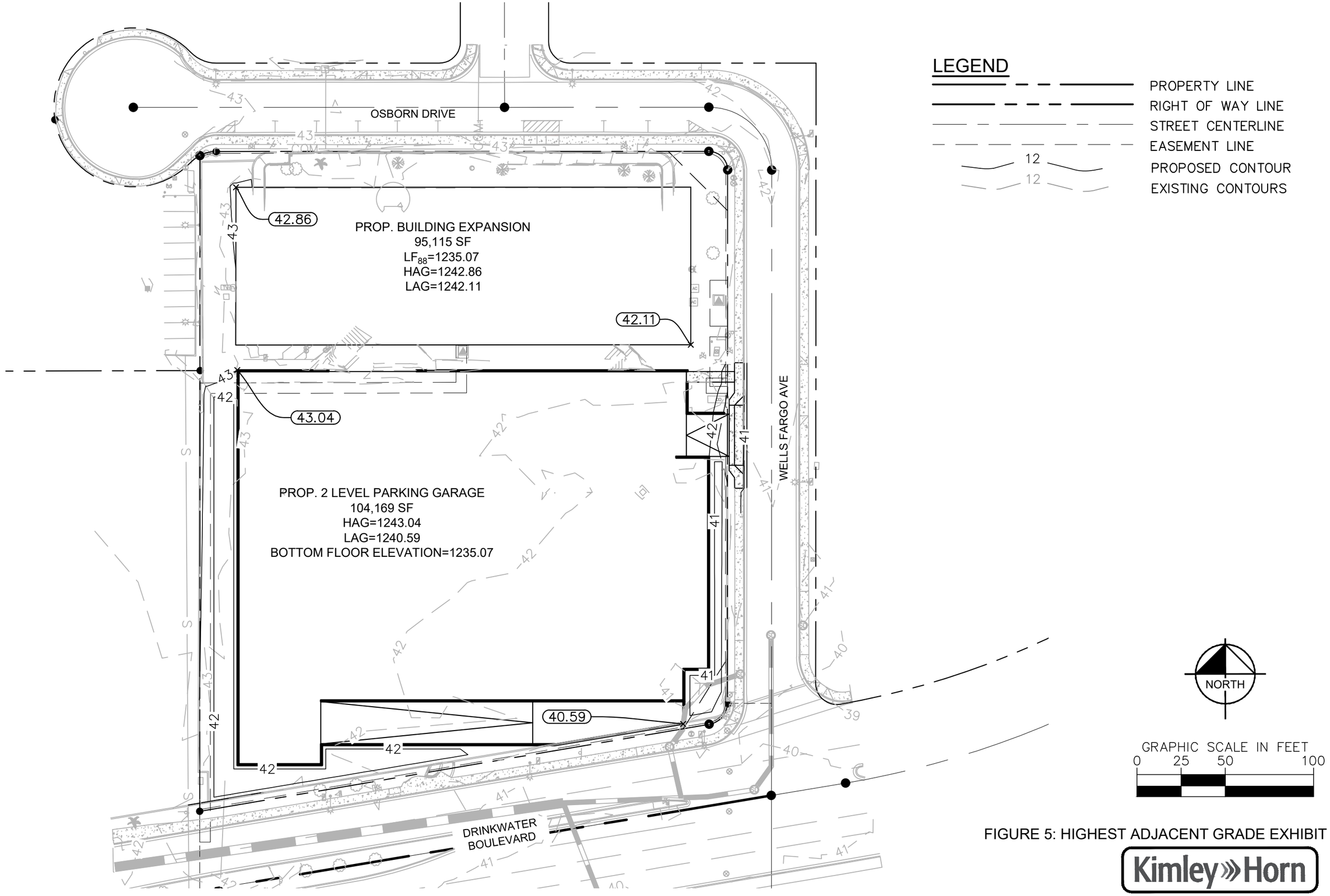

FIGURE 5: HIGHEST ADJACENT GRADE EXHIBIT

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